

# Nature *Magazine*

FEBRUARY  
1956

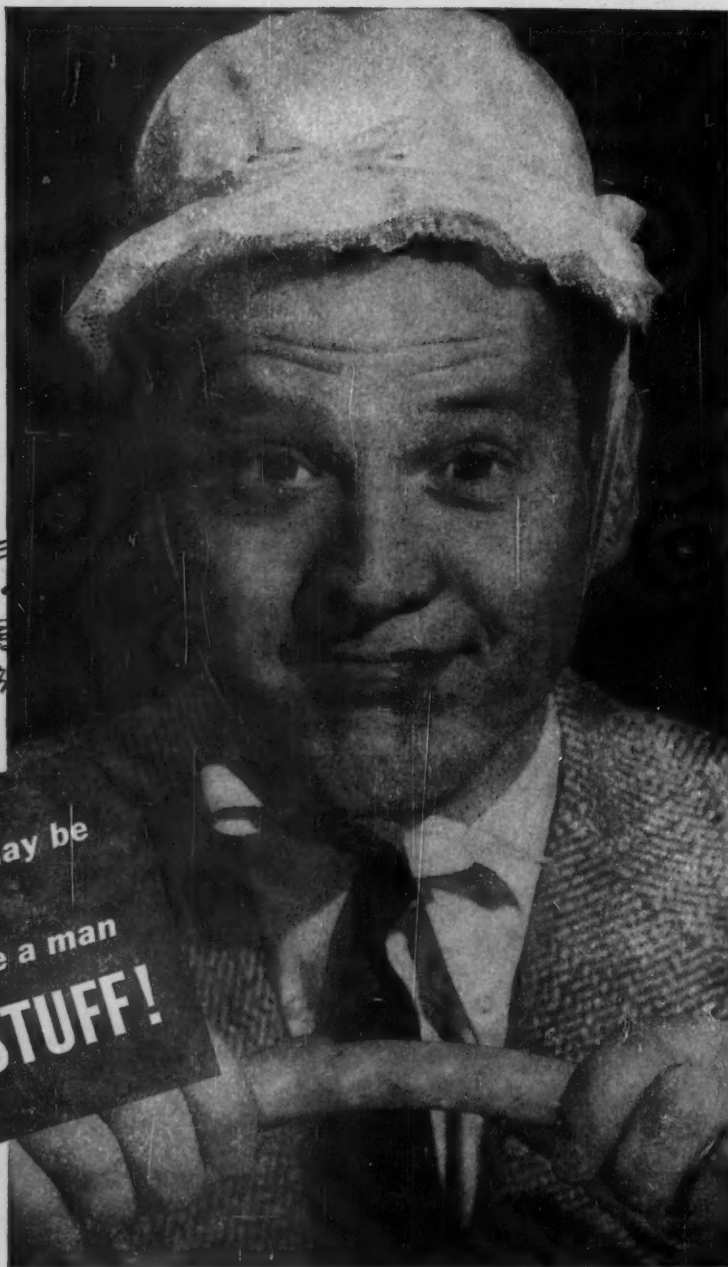
VOLUME 49  
NUMBER 2

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His big book, *Norman Ford's Florida*, tells you, first of all, road by road, mile by mile, everything you'll find in Florida, whether you're on vacation, or looking over job, business, real estate, or retirement prospects.

Always, he names the hotels, motels, and restaurants where you can stop for the best accommodations and meals at the price you want to pay. For that longer vacation, if you let Norman Ford guide you, you'll find a real "paradise"—just the spot which has everything you want.

Of course, there's much more to this big book.

If you want a job or a home in Florida, Norman Ford tells you just where to head. If you want to retire on a small income, Norman Ford tells you where life in Florida is pleasantest on a small income.

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# Nature Magazine

FEBRUARY, 1956 VOL. 49, NO. 2

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**Nature Magazine** past and present, is indexed in *The Reader's Guide* in your public library.



## In Our Service

*Tall Timber; Park Ranger; Fish and Wildlife.* By C. B. Colby. New York. 1955. Coward-McCann. Each 48 pages. Illustrated. \$1.25 each.

These three books present, in picture and brief text, the story of the work and responsibilities of the U.S. Forest Service, the National Park Service and the U.S. Fish and Wildlife Service. There is an introductory chapter in each book outlining the scope of the respective services, and the remainder of each book is devoted to specific activities. This material should be valuable in social study and conservation study in the schools.

## Briefly Noted

*Koala Bear Twins.* By Inez Hogan. New York. 1955. E. P. Dutton and Co. Illustrated by the author. \$1.50. For the quite young reader, this story of the appealing Australian koalas and other wildlife "down under."

*The World of Bees.* By Gilbert Nixon. New York. 1955. Philosophical Library. 214 pages. Illustrated. \$4.75. Popular discussion of hymenoptera by a British entomologist.

*The Stamp Collector's Encyclopedia.* Compiled by R. J. Sutton. New York. 1955. Philosophical Library. 350 pages. \$6.00. For the philatelist, defining things in the stamp world from "Abnormals" to "Zincos."

*First Bow and Arrow.* By C. B. Colby. New York. 1955. Coward-McCann. 48 pages. Illustrated by the author. \$2.00. Introduction to use of the bow and arrow for target shooting.

*Classics of Biology.* By August Pi Suñer. New York. 1955. Philosophical Library. 337 pages. \$7.50. Glimpses of the philosophical theories of biology that have been propounded in different ages up to our own time.

*Dictionary of New Words.* By Mary Reiser. New York. 1955. Philosophical Library. 234 pages. \$6.00. For the average individual interested in the everyday use of words that have become current in recent years.

*Reflections of A Physicist.* By P. W. Bridgman. New York. 1955. Philosophical Library. 476 pages. \$6.00. Collection of the non-technical writings of Dr. Bridgman in a second and enlarged edition.

*Mutual Aid.* By Petr Kropotkin. Boston. 1955. Extending Horizons

*Books.* Foreword by Ashley Montagu, with "The Struggle for Existence" by Thomas H. Huxley as an appendix. 362 pages. Cloth, \$3.00; paper, \$2.00. A new edition of this classic work.

*The Wind Call.* By Rosalie Fry. New York. 1955. E. P. Dutton and Co. 115 pages. Illustrated by the author. \$2.50. This is a charming little story for young children about the little people of the woods.

*The Dying Gaul.* By Judith J. Pike. Pasadena, California (510 S. Marengo) 1955. The author. 42 pages. This is a collection of poems by this poet, some of them dealing with Nature.

*Finches.* By Ian Harman. Fond du Lac, Wisconsin. 1955. All-Pets Books. 138 pages. Illustrated in color and black and white. \$4.00. Discussion of the species, breeding and care of these hard-bill favorites of bird-keepers.

*The Hurricane Hunters.* By Ivan Ray Tannehill. New York. 1955. Dodd, Mead and Co. 271 pages. Illustrated. \$3.00. This is the story of the men who fly into and around hurricanes in attempting to probe their secrets and discover their intentions.

*Sportsman's Digest of Spin-Fishing.* By Hal Sharp. New York. 1955. Barnes and Noble. 160 pages. Illustrated. \$1.00. With drawings and brief text, the author covers spin-fishing in all its details, of which there are more than we realized.

*Perky the Partridge.* By Howard A. Munson, Sr. Washington, 2, D.C. 1955. Review and Herald Publishing Association. 64 pages. Illustrated. \$2.50. A friendly story of the partridge, its life in the wild and the animals that make up its neighborhood.

*Matter and Light.* By Louis de Broglie. New York. 1955. Dover Publications. 300 pages. \$1.60. A collection of a number of the author's studies of contemporary physics from both the general and more metaphysical point of view.

*Dictionary of American Maxims.* Compiled by David Kin. New York. 1955. Philosophical Library. 597 pages. \$7.50. An interesting compilation of American maxims or sayings from "Ability" to "Zoroaster."

*Crop Protection.* By G. J. Rose. New York. 1955. Philosophical Library. 223 pages. Illustrated. \$10.00. A British entomologist provides a practical guide to crop protection from insects, fungi and weeds.

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# Nature IN PRINT

By HOWARD ZAHNISER

## Sea and Seashore

THE TWO TITLES at the top of the list of non-fiction "best sellers," at

the time these words are being written, are Anne Morrow Lindbergh's *Gift from the Sea* and Rachel Carson's *The Edge of the Sea*. Some weeks ago, when a "virus" brought the rare privilege of a day to one's self—in the midst of our pulsating city living and its compulsions—I read both these books, and on the bed with me was also Roy Waldo Miner's *Field Book of Seashore Life*. To any others so blessed with affliction, so withdrawn from the frustrating incitements of our crowded, hurried activities of livelihood and living, I commend this seashore trinity. Better still, I suggest them not only for healing but for health, for those who will withdraw themselves from their inland concerns, not waiting to be withdrawn by virus or neurosis, sensing not only the therapeutic values of such reading but also its prophylactic possibilities.

For five years and more I had had on my shelf, and many times in my hands, Dr. Miner's field book. It has been with me on occasion to the shore, of course, where it has been an interesting handbook, but I must confess that it has meant more to me at home as a book for browsing and contemplation, for inspiration even, than it has as a guide along ocean or bay. Perhaps if I testify that it has so thrilled me with its matter-of-fact, marvelous revelations of the prodigious variety of living things on the seashore that I have at times felt cool flashes over the flesh of my arms, this degree of inspiration may excuse my perversity in so using a field book. Not the least of my marvel and reverent wonder has been in admiration of the person who could prepare such a book, even though this preparation extended over a period of twenty years, as the dust jacket informs us—or perhaps *because* preparation could so persist for two decades. The

book has delighted me as a monument to human enterprise and accomplishment. But mostly it has been a pleasure in itself to behold its illustrations in color plates and drawings, to seem to learn something of seashore life, to sense an order in all its multiplicity. At the seashore, sitting or strolling on the sand or wading or swimming in the ocean or bay, I am, alas, more often delighted and amazed than inquiring and studious; more interested in what I see than in names and classifications. I return more inspired than instructed. My *Field Book of Seashore Life* returns with me and serves better back home with its instructions to renew inspiration, than it has at the shore with inspiration to stimulate instruction.

What a misappropriation this is of one of the best field guides we have, yet how I did enjoy it thus once more as I went down in books to the sea again and had the shore on my inland counterpane.

### Life of temperate waters

"It is a compact manual," says the jacket of this *Field Book of Seashore Life*, "of all the more common invertebrate animals inhabiting the shallow oceanic waters of the Atlantic Coast. The territory covered extends lengthwise from Nova Scotia to Cape Hatteras and, in breadth, from the upper tide limit to the edge of the Continental Shelf. It thus deals with the animals of the temperate waters of our eastern seaboard."

Much had I thus traveled these inland bookshelf trails of the seashore when I received Rachel Carson's new book *The Edge of the Sea*, and I might well paraphrase John Keats in trying to express with what further appreciation I first read Rachel Carson's lucent cadenced prose, informative and interpretive—interpreting the shore "in terms of that essential unity that binds life to the earth." It is another great book, inspiring and satisfying. Even its advertisements have been

eloquent. Emulating, or enlisting, Miss Carson's genius of appreciation and expression, the publisher's advertisers have proclaimed:

"As the tide goes down it draws curious man after it down the beach, over the rocks, seeking he knows not what unthinkable exposure. Like a moon-world the sea-world lies beyond, the boundaries of imagination with forms and purposes not paralleled on earth or air. We read of it and wonder and *half* believe. Only as the tide goes down can we see for ourselves.

"Here at the edge of the sea, we do not have to wait for some scientist to return in his submarine space-suit. Here all men can make their own voyage to another shore. Here life began, here the forces of evolution swept it along an ever more complex path, and here they are visibly still at work. Here the sea around us draws back to let us touch its depths.

"To this attainable other world," the advertisement concludes, "Rachel Carson's new book is an eloquent revealing guide."

After a reading and re-reading the book seems to surpass even the promise of its advertisers, an observation which I trust will be considered a tribute to the author and not a challenge to the advertisers.

### Illustrations effective

Around one appearance of this advertisement that I am admiring, and scattered through the text of another, are selected drawings from the book's rich store by Bob Hines—drawings that contribute much to the volume, both to its communication of beauty and to its utility as a guide to fact and understanding. Illustrations and text are as harmoniously composed as are the piano accompaniment and the soloist's score of a violin sonata.

I look forward to a trip to the seashore with this volume.

Seashore excursions for most of us, however, are not essentially for instruction about, or understanding and appreciation of, either sea or shore. They are rather for our own recreation, our re-creation, for surcease from the urgencies of our mechanized living, for rest in the midst of more sweeping rhythms, for perspective after distraction. When Rachel Carson perceives "the essential unity that binds life to the earth"

as setting the terms of her interpretations, she leads us into our appreciation of the seashore as a retreat.

Anne Morrow Lindbergh's *Gift from the Sea* is the text of her appreciation of the shore as the scene of retreat, as the source of symbols of her contemplations. As she thinks ahead to her return from the shore, appreciating the way in which her seaside isolation has provided a "natural selectivity" for which in her work-a-day world she will have to "substitute a conscious selectivity," Mrs. Lindbergh reflects on the precepts that can be "signposts toward another way of living." She lists them:

#### Awareness of life

"Simplicity of living, as much as possible, to retain a true awareness of life. Balance of physical, intellectual, and spiritual life. Work without pressure. Space for significance and beauty. Time for solitude and sharing. Closeness to nature to strengthen understanding and faith in the intermittency of life: life as the spirit, creative life, and the life of human relationships."

The shells she carries home with her remind her of these precepts suggested to her by channeled whelk, moon shell, double-sunrise, oyster bed, paper nautilus, and a few others as she pondered her life and living in the terms of these symbols.

My bookseller tells me that *Gift from the Sea* is purchased by many women, popular as a thank-you gift, something especially feminine. I understand why, yet I feel that many men may well read the volume for their own understanding and edification, perhaps enjoying the more seeing some of their own perplexities so discussed that a male reader can imagine himself detached. All will benefit from its contemplation and revelation of values.

Such a worth is in Rachel Carson's *The Edge of the Sea*, also, and profoundly. As on the seashore itself, it seems to me, one can contemplate in this volume the very life and environment with which it deals—not as symbol but as reality itself related for our own use. Mrs. Lindbergh tells us the precepts she learned on the shore. Rachel Carson shows us the shore itself and the sea, and we feel it ourselves.

"Contemplating the teeming life of the shore," writes Rachel Carson in her concluding paragraph, "we have an uneasy sense of the com-

munication of some universal truth that lies just beyond our grasps. What is the message signaled by the hordes of diatoms, flashing their microscopic lights in the night sea? What truth is expressed by the legions of the barnacles, whitening the rocks with their habitations, each small creature within finding the necessities of its existence in the sweep of the surf? And what is the meaning of so tiny a being as the transparent wisp of protoplasm that is a sea lace, existing for some reason inscrutable to us—a reason that demands its presence by the trillion amid the rocks and weeds of the shore? The meaning haunts and ever eludes us, and in its very pursuit we approach the ultimate mystery of Life itself."

*The Edge of the Sea.* By Rachel Carson. Boston: Houghton Mifflin Company. 1955. xii + 276 pp. (6 by 8 5/8 in.), with 187 (or more) drawings by Bob Hines, including 3 maps and half a dozen full-page representations of seashore scenes, appendix on classifications, and index. \$3.95.

*Field Book of Seashore Life.* By Roy Waldo Miner. New York: G. P. Putnam's Sons. 1950. xv + 888 pp. (4 1/2 by 7 1/2 in.) with unnumbered black and white drawings on 251 plates and more than 215 color drawings on 24 plates, selected references, and index. \$6.

*Gift from the Sea.* By Anne Morrow Lindbergh. New York: Pantheon. 1955. 128 pp. (5 1/4 by 8 1/4 in.) with 9 drawings. \$2.75.

#### Indians of Lassen

*By Paul E. Schulz. Lassen Volcanic National Park, Mineral, California.* 1955. Loomis Museum Association. 176 pages. Illustrated. \$.85, plus 12 percent for postage and packing.

Lassen Volcanic National Park is a truly unique area in the National Park System, its geological significance being outstanding. However, early inhabitants of Lassen Peak and the Lassen area were Indians, and their story is linked with the story of the Park. The author, who is a geologist, has assembled the material for this book from qualified students of the ethnology of the region. He says that little is original with him, but that he has merely interpreted the work of competent students in the interest of visitors to Lassen. In so doing he has made a distinct contribution.

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# Reviews

## The Honey-Guides

By Herbert Friedmann. Washington, D.C. 1955. Smithsonian Institution. 292 pages. Illustrated, including 5 color plates by Walter A. Weber. Available from Superintendent of Documents, Washington 25, D. C., \$1.75.

In this interesting and valuable publication the Curator of Birds of the United States National Museum has assembled a vast amount of information about an interesting family of birds—the honey-guides. There are eleven species in the family, in four genera, and they are related to the barbets, the woodpeckers and the toucans. All but two of the species are exclusive to Africa, south of the Sahara. One of the other species is found in the Himalayas and the other in Burma, Siam, Malaya, Sumatra and Borneo. The vernacular name comes from the habit of these birds of "guiding" rats and humans to the nests of wild bees. They are also parasitic in their breeding habits. However, these species are by no means thoroughly known, and Dr. Friedmann has tried to bring together all that is known of these birds in the literature, from the unprinted reports of naturalists in Africa and from his own field studies. The result is one of the most fascinating ornithological discussions we have found in a scientific work.

## The Natural History of North American Amphibians and Reptiles

By J. A. Oliver. New York. 1955. D. Van Nostrand Co. 359 pages. Illustrated. \$6.95.

Recognizing the steady growth of interest in the study of reptiles and amphibians, as indicated by the popularity of field guides, Dr. Oliver, who is Curator of Reptiles of the New York Zoological Society, felt that there was need for a book that would cover in one volume the general ways and habits of amphibians and reptiles. There is still incomplete knowledge in this field, but Dr. Oliver has tried to assemble and summarize available data and to present it as simply as possible, together with its implications. The book is intended for the naturalist and beginner in herpetology and, indeed, it is one in the series entitled "The New Illustrated Naturalist"

being brought out by this publisher. In one chapter the author discusses keeping reptiles and amphibians as pets, and provides much valuable information against a background of personal experience.

## Water

*The Yearbook of Agriculture, U. S. Department of Agriculture. Washington, D.C. 1955. 751 pages. Illustrated. For sale by Superintendent of Documents, Washington 25, D.C. \$2.00.*

This important addition to the library of U. S. Department of Agriculture Yearbooks deals with an obviously vital subject. The book seeks to supply as much information as possible about water in a practical, useful way for farmers and other users of this precious resource. It also seeks to bring out that more information about water is needed and more wisdom about its use. This book is a collaboration by a long list of men concerned with water and its relationship to man's needs. The Yearbook is edited by Alfred Stefferud. Section headings in the book are: Our Need for Water. Where We Get Our Water, Water and Our Soil, Caring for Our Watersheds, Water and Our Forests, Water for Irrigation, Water and Our Crops, Our Ranges and Pastures, Gardens, Turf and Orchards, Drainage of Fields, Water and Our Wildlife, Pure Water for Farms and Cities, A Look to the Future.

## Great Men of Science

By Sanford Simmons. New York. 1955. Hart Book Co. 64 pages. Illustrated by Hilda Simon. \$2.00.

This is a collection of brief biographies written for boys and girls and introducing them to seventeen great names in the history of science. These are Hippocrates, Archimedes, Copernicus, Galileo, Kepler, Van Leeuwenhoek, Newton, Volta, Pasteur, Alexander Graham Bell, Walter Reed, Thomas Edison, Luther Burbank, George Washington Carver, Pierre and Marie Curie (the latter belying the title) and Albert Einstein.

## My Hobby Is Bird Watching

By Mary P. Pettit. New York. 1955. Hart Publishing Company. 128 pages. Illustrated. \$2.95.

Written by a life-long bird watcher, this is a practical introduction to the pleasures and practices of bird watching. Profusely illustrated, it gives general instruction on bird identification, the equipment needed and the techniques employed. Advice is given on building bird houses

and bird feeders, and on establishing backyard sanctuaries. One chapter is devoted to bird photography, another on where to find birds. Publications about birds are listed, and a final chapter on items of interest to bird hobbyists rounds out a most useful book.

## Brook Trout

By Bob Elliot. Orange, Connecticut. 1954. Practical Science Publishing Co. 242 pages. Illustrated. \$2.95.

This book is, to give it its full title, "All About Brook Trout from Maine to California, with Pointers on Where and How to Fish for Them." This takes in a lot of territory, both geographically and piscatorially, and anglers will find it a most practical and useful guide. It is a fisherman's book for fishermen.

## The Reptile World

By Clifford H. Pope. New York. 1955. Alfred A. Knopf, Inc. 325 pages and index. Illustrated. \$7.50.

In this excellent book Mr. Pope deals with the five major groups of reptiles—crocodiles, tuatara, turtles, snakes and lizards. Each section opens with a general account of the groups, and is followed by discussion of the individual species. Mr. Pope's text is interesting and readable, as well as informative. Splendid illustrations complement the text, and Mr. Pope has made a distinct contribution to the list of popular writing about reptiles.

## Cactuses

*How to Make Cacti Flower.* By Edgar Lamb. New York. 1955. Pitman Publishing Corporation. 80 pages. Illustrated. \$1.95.

*Cacti and Other Succulents.* By Edgar Lamb. New York. 1955. Pitman Publishing Corporation. Illustrated in color and black and white. \$10.00.

These two books are by the same author, British horticulturist and specialist in cactuses and succulents. The smaller book is a practical guide to growing these interesting plants and bringing out the best in them—the blooms. The larger book, profusely illustrated with excellent colored and black and white pictures by the author, identifies the plants, indicates their area of origin, describes them, and provides concise information about their culture. The author says that the latter book carries his studies up to 1954, but he is still studying these plants and photographing them, with more information on additional species to come.



# Contents noted

BY THE EDITOR

**CONSTRUCTION OF ECHO PARK DAM** in Dinosaur National Monument has been abandoned as a part of the Upper Colorado River Project. Proponents of this dam, and the representatives in Congress from the region, have agreed to leave this structure out of the pending legislation designed to provide much-needed water resources for this dry country. This policy has been underlined by the Secretary of the Interior in a statement placing the administration on record in favor of the Colorado project *without* the Echo Park Dam. These decisions represent a victory for the forces of conservation, which have devoted great effort to defend the integrity of one of the outstanding areas in the National Park System. It was on this ground, and this alone, that the American Nature Association stood with other conservation groups, insisting that there are alternative sites that are as practicable as Echo Park. With this controversial and precedent-setting proposal out of the way, there seems no reason why the storage program, meaning so much to this semi-arid and arid area, should not receive the approval of the Congress.

However, it is important that the legislation carrying into effect the Upper Colorado project specifically safeguard Dinosaur National Monument from subsequent invasion for dam purposes, and also protect any other area under the National Park Service that might be menaced by the project. Indeed, it would be highly desirable if Dinosaur National Monument could be made a National Park.

**BILLBOARDS CARRYING A SAFETY MESSAGE** are a contradiction, declares the Pennsylvania Roadside Council, calling upon the Governor of the Keystone State to end the use of rural billboards in Pennsylvania's safe-driving campaign. Robert Moses, New York's Commissioner of Parks, adds a fervent "Amen" to this contradiction. He points out: "That billboards are a menace to safe driving has been recognized by every court and practically every legislative body that has ever considered the matter. As early as 1932 the highest court in New York State upheld the Superintendent of Public Works when he screened out a large billboard which had been erected at a curve on a busy highway because, as the Court said, 'such structure may divert the attention of the driver from the road.' When the New York Legislature recently empowered the New York Thruway Authority to prohibit advertising signs within 500 feet of the new Thruway it declared the 'specific objectives' of the legislation to be 'to provide for maximum visibility', to prevent unreasonable distraction of operators of motor vehicles' and 'to promote

maximum safety, comfort and wellbeing of the users of the Thruway' as well as 'to preserve the scenic beauty.' The so-called 'Safety' billboards are in the same category and, fortunately, very few of the states resort to this foolish practice."

## WITHOUT THE NECESSITY OF FURTHER COMMENT

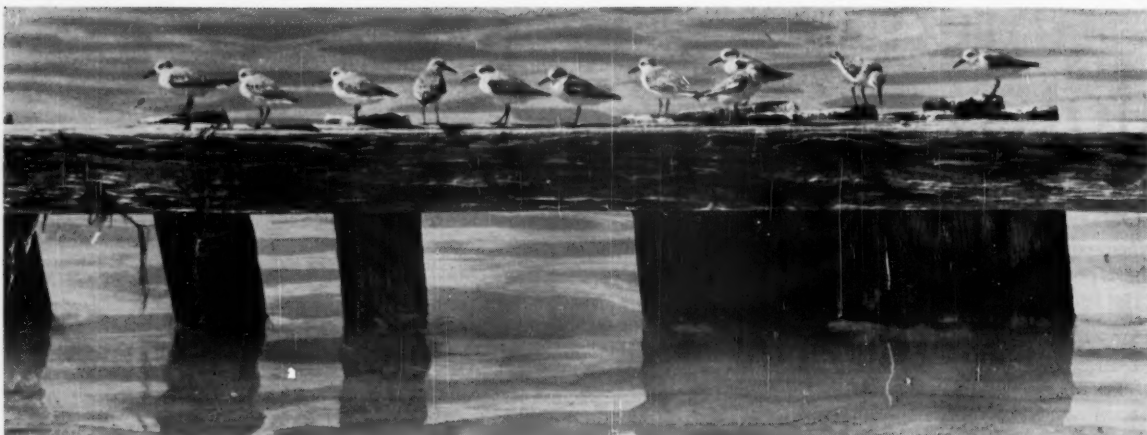
we reproduce the following editorial from the *Chicago Tribune*, titled "Boy with A Gun." The newspaper says: "The father of the 14-year-old boy who has returned from slaughtering 300 wild animals in Africa appears to be proud of his son's exploits. Harvey Schur of Scarsdale, N.Y., the young animal killer, arrived in New York from Portuguese West Africa with exultant stories of slaying game singly and in groups during a 3-month safari. He slew elephants and rhinoceroses and once, from a safe treetop, bagged four hippopotomuses. On another occasion he sighted a leopard and with one shot 'blew his head off.'"

"The father, Ben Schur, a button manufacturer, says Harvey began ending the lives of wild things at the age of 9, by shooting deer and birds in the Catskills. At 12 he was hunting in Maine. Last year, when 13, he went alone to Alaska and killed bear and seals.

"The proud young man of Scarsdale brought back 300 skins or heads of his kills to impress his schoolmates. It would be nice if the ghosts of the beasts he butchered would haunt him, but we can't count upon that boon. We can hope his father has a thumping bill for taxi-dermy."

**PHILADELPHIA'S TINICUM MARSH** has long been noted for its wildlife, especially its congregations of waterfowl. Now 145 acres of this marshland has been transferred to the City and constitutes one of the largest municipal natural bird sanctuaries and wildlife refuge in the possession of any major city. This acreage has been given to the people of the Quaker City by the Gulf Oil Corporation, which retains easements for pipelines that traverse the marsh. An additional sixty acres, under the jurisdiction of the U. S. Army Corps of Engineers, have also been set aside as a part of the refuge. The tract is only six miles from Philadelphia's City Hall. The city's recreation department plans minor development in the way of trails and observation platforms, and will make plantings of food plants to attract and maintain the birds. A competent wildlife specialist will be in charge. Nature enthusiasts in the Philadelphia area, with the blessing of the Pennsylvania Game Commission and the U. S. Fish and Wildlife Service, and through the agency of Philadelphia Conservationists, Inc., and its president, Allston Jenkins, brought this about.

R.W.W.



PHOTOGRAPH BY ALLAN D. CRICKSHANK FROM NATIONAL AUDUBON SOCIETY

Plump sanderlings are common along the shores of Hilton Head Island.

*What lies ahead for the wilderness that is now*

## Hilton Head Island?

By VIRGINIA C. HOLMGREN

**P**ARADISE—ON the map under the name of Hilton Head Island—lies just off the South Carolina coast where Port Royal Sound meets the Atlantic Ocean. Almost forgotten by the mainland, the island's some thirty-thousand acres of forest, field, beach and marshland have kept their tally of wildlife residents wonderfully high. It is not the high count of pioneer times, of course, but still high enough to impart the feeling that something magic has happened to the calendar, and the visitor is whisked back to a hundred years before yesterday.

The wild turkey seen strutting through the underbrush, flirting the chestnut tips of his tail feathers, could be the descendant of a fine gobbler that Audubon might have sketched. And the wild turkey is not the only

unusual sight for bird watchers on Hilton Head. The island offers natural shelter, food and quiet that make many kinds of birds feel at home. Long, white sand beaches are there for the shore-birds; for others there are marshlands, open fields, woodlands with tall pine, laurel, sassafras, star-leaved gumwood, live oak, hackberry, wild plum and cherry, fig, and grape.

There are no bright lights on Hilton Head; no movies, supermarkets, or corner drug stores. There is not even a bridge, although one is being built and will be ready some time this spring. Until then, Hilton Head, like the netherworld of the Greeks, can be reached by ferry boat. It is not the River Styx one crosses, but Calibogue Sound and Skull Creek, after first traveling Highway 17 to the turnoff for Bluffton and Buckingham Landing.

A wood ibis stands guard in the deep swamp of the island's sanctuary, which was set aside as a wildlife refuge in Colonial days.

PHOTOGRAPH BY ORION D. HACK





A lookout tree on the beach of Hilton Head Island near Dolphin Head, which faces on Port Royal Sound.

PHOTOGRAPH BY ORION D. HACK

Do not be fooled by the royal sound of *Buckingham*. The Landing is just a landing, a jumping-off place.

Of course, when the bridge is open, people will follow; then motels, shops, even movies. Fortunately for us who love the island as it is, the companies owning three-fourths of this haven have promised that as much as possible of the wild beauty will be left untouched. The pledge is in keeping with tradition, for a part of the island near the south end has been recognized as a wildlife refuge since Colonial times, and was so marked on maps dated 1777. It is there that the egrets still nest, unbelievably beautiful in their plumage of bridal white. On the beach, not far away, ospreys and bald eagles may be seen. Surely all the inevitable building and development that lie ahead will not be allowed to violate these sanctuaries. And yet violation in the name of progress has too often been the story.

Already the chroniclers of Hilton Head have had to record that there are no more cranes on the Whooping Crane Pond. Will Heron Pond, Otter Hole, Buck Island and Possum Point also lose their right to be so named? I hope not. There must be many people who prefer the quiet beauty of a heron flying against the sunset to the

glitter of neon; people who want to live where forest and marshland are green, the beaches free of ballyhoo and litter. Are there enough of them so that the owners can make a rightful profit and still leave Daniel Boone "elbow-room" for peace-loving, Nature-loving islanders?

Those who want to call the island "home"—not just a vacation spot—are figuring out various ways of earning a living without commuting to the mainland or disrupting island peace. At present the projects include a fishing camp, bath house, a few snack bars, small seafood packing plants, farms, commercial gladiola and tomato fields, and a camellia nursery specializing in rare grafts. The island also supports a building supply and hardware store, besides several small dealers in groceries, gasoline and other staples. Radio, TV and reliable once-a-day mail service keep residents in touch with the world, and there is also an emergency airstrip.

Most vacationers bring a large part of their food with them. However, one can count on catching—or buying—fishes, crabs or oysters in season, and the best shrimp ever. One can usually dicker for butter beans, peas, corn, okra and a thumping good watermelon at any of the scattered Negro cabins, many of which stand on family-

Willetts, with their flashy black and white wing pattern, congregate along the beaches.

PHOTOGRAPH BY ALLAN D. CRUICKSHANK FROM NATIONAL AUDUBON SOCIETY







In the brackish water near Folly Field a wood ibis forages for a tasty snack.

PHOTOGRAPH BY ORION D. HACK

owned "heir" land parceled out to them at the close of the War Between the States.

Once there were inherited plantation homes on Hilton Head, also; a good twenty or so. But in 1861, when Federal troops captured the island's Fort Walker, Southern white families were forced to flee, abandoning their homes to enemy plunder. Now time has finished the destruction begun in wartime. Only one plantation home—Honey Horn—is still standing. Of the others there remain only battered ruins of tabby wall, although the old names still linger on island tongues—Seabrook, Cherry Hill, Piney Woods, Otter Hole, Cotton Hope, the Baynard place. But, like the crops of long-staple cotton that once made the sea islands famous, the antebellum "Big Houses" and their way of life are gone.



PHOTOGRAPH BY ALLAN D. CRUICKSHANK  
FROM NATIONAL AUDUBON SOCIETY

Harder to find, but nevertheless on the Island, is the yellow-crowned night heron.

Hilton Head has grown used to seeing civilizations come and go. The Indians were living here many centuries before the Yankees stormed Fort Walker, and only humped mounds of shells, bones and broken pottery now mark the places where Indian campfires once glowed brightly. Four hundred years ago the Spaniards came to get fresh water for their far-sailing ships, yet besides the name "Spanish Wells" the only reminders of their visits are a hundred or so island-bred marsh tackys, descended from the original Spanish steeds.

Perhaps this come-and-go history explains why the deer, raccoons, marsh birds and other wild creatures of Hilton Head do not seem too startled by this new tramping of footsteps on their island. The Negro population is more than a thousand, and the permanent white population has doubled from twenty-five to fifty in the past year or so.

Of course, during the summer, during any weekend or on a holiday, that number can triple or quadruple at the drop of a picnic basket. And people who own vacation cottages on Hilton Head have learned to expect the unexpected guest. They have also learned that the line for the last Sunday night ferry forms early in the afternoon and late-comers simply get left behind, whether with or without a place to sleep. Life will be dull when islanders no longer can dash down to the landing on a summer Sunday eve to count the cars left behind as the "Pocahontas" pulls away on her last trip to mainland. No, it will not really be dull, for even a steel and concrete bridge could not make Hilton Head lose its enchantment. There will still be the sea and the sky. The golden-speared sea oats will still ride the crests of the dunes. The white sand of Folly Field Beach will still be white, and the Atlantic blue, blue-green, blue-black.

Mockingbirds flaunt their gray and white sleekness across the front lawn a dozen times a day. Bluebirds teach their babies to fly from the scarlet hibiscus bush at the doorstep to the thornbush across the road. Beyond our zigzag row of cottages lies the big field where more houses will be built too soon, but where now the meadowlarks and bob-whites have their nests amid palmetto



scrub, grass and brambles.

"Billiard-scilliard," the meadowlark calls out, sweet and clear, just as he did years ago back in Ohio, where mother first showed me his yellow breast with the black V tie, and the white outer tail feathers when he flies.

The bob-white is not to be outdone in cheery greeting. "Bob White! Bob, Bob White!" The calls are touchstones to memory, to childhood; sunny days in the country; bird walks. The little brook behind the schoolhouse and the woods beyond it were where I saw my first—and only—rose-breasted grosbeak.

That long-hunted grosbeak would be a rare find here, probably not to be found at all, but there are many others that I can joyfully add to the "life list" in the front of my well-thumbed Peterson's *Field Guide to the Birds*. These include my first wild turkey, first bald eagle, all the herons and the host of shorebirds. I can add ducks, geese and other northerners who find Hilton Head and go no farther south in their quest for a mild winter. There are southern birds from Florida and the Caribbean lured north by the cooler summer, or blown north by hurricane, like the bridled terns we saw after the high winds of "Connie" and "Diane." Make a tally of all the birds on the island and you begin to understand why the explorer William Hilton—for whom the island is named—made detailed mention of birdlife in his report—published in London in 1664—*Relation of a Discovery Lately Made on the Coast of Florida*. Since then there have been hundreds of other bird watchers here, both scientific and simply admiring, and the island shares South Carolina's pride that seventy-seven birds were first made known to science from this State.

So I add my own tally. I cannot find the "great flocks of Parrakeetos" that William Hilton listed, but in the cat-tail swamp beyond Folly Field the flocks of red-winged blackbirds still sing their "cher-o-kee." A loggerhead shrike darts by in quest of an insect tidbit, his black mask and chubbier body telling you that he is not the mockingbird he resembles. Toward sundown



PHOTOGRAPH BY ALLAN D. CRUICKSHANK  
FROM NATIONAL AUDUBON SOCIETY

Black-crowned night herons may be added to the bird list.

comes the familiar "beep" of the nighthawk as he swoops about consuming mosquitoes. "Eat away," I always think gratefully when I see the flashing white wing patches that identify him. Just as bug-eatingly helpful, although not as familiar, is the chuck-will's-widow, whose four-noted call will distinguish it from its cousin, the whippoorwill, if you listen closely. One can not miss hearing the widow if one stops the car for a moment at dusk just where the road to Folly Field leaves the highway. Turn right there, instead of left, to see the old burying ground with its headstones that read 1744, 1803, 1826. And perhaps a pileated woodpecker will flash his red crest among the gray festoons of ghostly Spanish moss on massive liveoaks or bright-

The "billiard-scilliard" call of the meadowlark may be heard by visitors to Hilton Head Island.

PHOTOGRAPH BY HUGH HALLIDAY  
FROM NATIONAL AUDUBON SOCIETY



leaved magnolias. Elsewhere that flash of red is more likely to be a cardinal, scarlet or summer tanager, or, perhaps, just the red mitten of a sassafras.

If a small, sparrow-sized edition of the rainbow flits by, that is a painted bunting. These beauties are seen almost anywhere on the island, but especially out by old Fort Walker. Most visitors to Hilton Head go to the fort ruins to dig for buried relics—wine jugs, handblown bottles, uniform buttons—but for me the Fort is the place where I am almost certain I saw a sandhill crane. There would not be an *almost* in that sentence if he had flown (cranes fly with neck outstretched; herons with neck S-curved) or if I had had my field glasses. With buried treasure on the brain I had not thought to bring them. Never forget them on Hilton Head! And when I went back with glasses—no crane. Was it only a great blue heron after all? Bigger than the American egrets nearby and with that tufted look to his tail feathers, he just had to be the rare sandhill.

There are plenty of ibises here, both the red-billed white ibis and the larger dark-necked wood ibis. There are marsh hens—called rails in the guide book—and bitterns; snowy egrets with their golden slippers and the larger American egret with his golden bill. On the list go regal great blue herons, and the little blues, also, both the sober-hued adults and the immature white, as well as the calico "teenagers," who are startlingly patch-worked in both colors. The Louisiana heron is here, too, distinguished from the little blue by its white pantalettes. And, of course, there is the ubiquitous



PHOTOGRAPH BY ALLAN D. CRUICKSHANK  
FROM NATIONAL AUDUBON SOCIETY

Pileated woodpeckers flash red crests among the festoons of Spanish moss.

Mr. Fly-up-the-creek, as the country-folk call him, that deceptive little green heron who is not green at all except for a few feathers in just the right light. He confuses us still further by looking like two different birds, depending on whether his crest is up or down, his cinnamon-sprinkled neck stretched out or hunched. His yellow legs are tell-tale, however, and serve as sure identification.

Much easier to name, but harder to find, is the graceful yellow-crowned night heron or the chunkier black-crowned. They are almost certain to be seen on Hilton Head, although somewhere along the marshy banks of Broad Creek or the still waters of Heron Pond. All it takes is a little quiet watching and waiting.

If a quiet walk on the shore sounds like dull stuff compared to bingo games and other gay diversions on the boardwalk, Hilton Head is not the place to go. But if it is a heaven of clean air and a quiet sky one seeks, blue sea and a whirl of wings, then Hilton Head is the answer.

That largish shorebird with the flashy black-and-white wing pattern is a willet; the plumper small one with the wide white wing-strip is a sanderling. A convoy of brown pelicans sails sedately past. A sand-piper teeters at the water's edge. The palmettoes are gossiping in the wind.

Are they trying to say that, like the paroquet and the whooping crane, the herons and the ibises, wild turkeys and marsh hens of Hilton Head will soon find the tally smaller and smaller? I hope not. It need not be so, not if enough of us really want to keep them here.

## AND THEN, THE HEART

*You have been good to me; You gave me eyes to see  
The first buds on the greening walnut tree,  
The skies that arc above my happy, mortal head,  
The kindled fire of life within me that is fed  
By all You have made beautiful and good, . . .  
As lark songs and the clean, new smell of wood,  
And then You made for me, a heart to understand  
The cycle of the year on this bright land.*

Rosemary Clifford Trott

*Misinformation and  
selfishness have pre-  
judiced man against*

## THE BOBCAT

By HOPE SATTERTHWAITE JEX



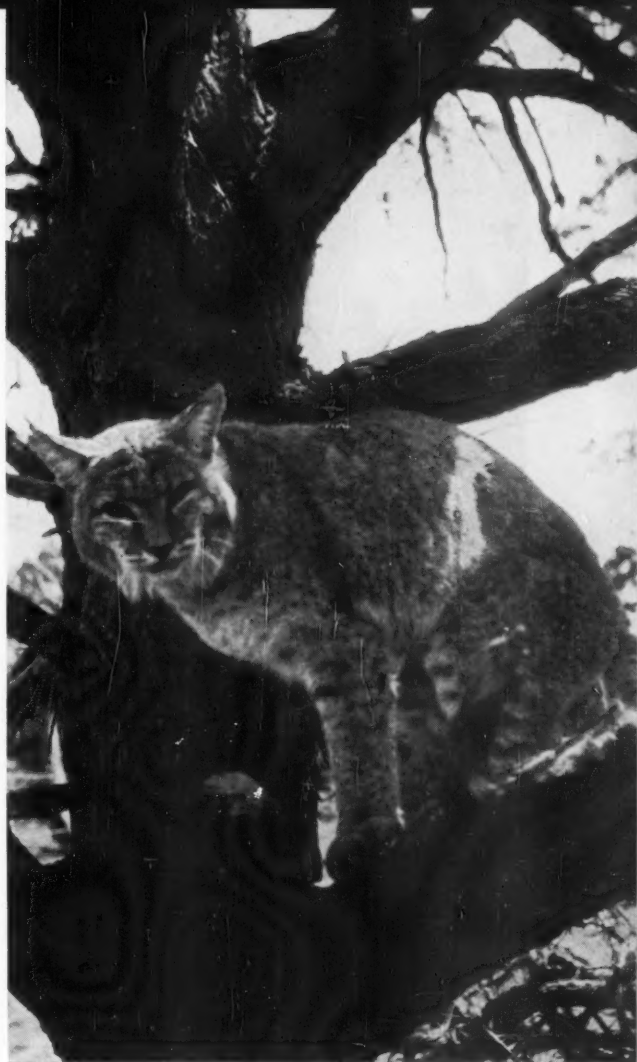
FROM THE nickname of "Lucifer," by which he is dubbed in some parts of his range, and from the bounty that is all too frequently set upon his head, one might, by a stretch of the imagination, visualize the bobcat as an incarnation of John Milton's Prince of Darkness.

But "lucifer" is in reality merely a corruption of the French phrase, "loup-cervier," or "deer-wolf," and, although hardly correct zoologically, more often designates the bobcat's northern cousin, the Canada lynx. As for the bounty, those concerned with the perpetuation of our native wildlife have long decried it.

Rather than being pursued by a policy of extirpation, the bobcat might better be recognized as a rarity of these modern days, a true wilderness species that has managed to withstand the encroachment of civilization. In the northeast especially, he leads his secret life on the fringes of agricultural communities, hurting the farmer not one whit and asking only to be let alone.

*Lynx rufus*, known variously as the bobcat, the bay lynx, or the wildcat, for all his tenacity of survival, still remains somewhat of a mystery as regards the more intimate aspects of his existence. Little is known, for example, of his mating habits or of the gestation period. And until fairly recently his food habits had not been studied, although hunters, without troubling to investigate, claimed him as a competitor for game. Because of his native shyness the bobcat's life is not an open book; yet this very shyness undoubtedly contributes to his survival.

A medium-sized wildcat, weighing from fifteen to thirty pounds—rarely up to forty pounds—he has rather long legs, a short tail, a ruff about the face and, sometimes, short ear-tufts. The bobcat differs from the somewhat larger Canada lynx in his more tawny, spotted coloring and in the fact that his tail tip is black only on top, whereas the tail of the lynx is completely tipped with black. The Canada lynx also has conspicuous ear-tufts, and is much more heavily furred, the thick covering turning his feet into effective snowshoes. In



PHOTOGRAPH BY B. E. FOSTER, U. S. FISH AND WILDLIFE SERVICE

Known variously as the bobcat, bay lynx and wildcat, *Lynx rufus* has managed to survive despite bounties and persecution. Study of its habits is proving that it is by no means properly classified as a "varmint."

fact, the well-furred coat of the lynx makes the difference in size between the two wildcats appear greater than it actually is. Only in the most northerly parts of his range, however, does the trail of the bobcat cross that of the lynx. Furthermore, the bobcat prefers a range more open than the thick spruce forests that the lynx calls home.

In the northeast the bobcat shows a liking for rocky ledges, thickets, wooded areas, swamps and hilly ground. He haunts abandoned farmlands where the slow change from field to forest is in evidence. Here he can find an abundance of the small mammals that form the staple of his diet, and can live unmolested by the disturbing activities of civilization, even though within its boundaries.

The bobcat ranges widely in his search for food, traveling in a circuit some four or five miles a night, a total area of ten to fifteen square miles being covered in





PHOTOGRAPH BY L. J. GOLDMAN, U. S. FISH AND WILDLIFE SERVICE

Bobcat kittens like this one usually remain within the family circle for several months after birth.

a winter. In fact, one Maine bobcat traveled a range, calculated from his tracks, of some forty square miles. During these wanderings he may den up in any convenient thicket or, preferably, on a rocky ledge.

The young, in the northeast, are born in some such rocky den during March or even later, the litter usually numbering two or three. As with domestic kittens, bobcats are born blind, their eyes opening in about nine days. By the end of two months the kits are weaned, but they may stay with their mother for several months. With the approach of autumn the kits are hunting for themselves. The family, however, usually travels as a group well into the winter.

The role of the male bobcat in family life remains somewhat obscure. The consensus is that, like the tomcat, he retires from the picture after the mating season. According to early legend, he may even, again like the tomcat, hold cannibalistic ideas towards his offspring. Certain it is, however, that the mating act is accompanied by all the banshee howls and bloodcurdling screams of back-fence feline romance, magnified beyond belief. To the uninitiated, the voice of the bobcat, heard at night for the first time, might well call up

visions, not of a "deer-wolf," but of a sudden visitation of the Prince of Darkness in person. Yet the listener would have nothing to fear; true child of the wilderness, the bobcat would be the last to seek a deliberate meeting with *Homo sapiens*.

It is on the score of his diet that the bobcat has chiefly aroused the enmity of biped hunters. They are wont to claim that he destroys game, a privilege which they would rather reserve for themselves. This claim, however, like so many others regarding so-called predators, has been based largely upon opinion rather than fact. Recent studies by qualified scientists tend to show that the bobcat has less effect in reducing populations of vulnerable game than have the hunters who swarm the countryside during open seasons.

In particular, the bobcat's possible consumption of deer and grouse has worried northeastern hunters. Analyses of droppings and stomach contents, however, have shown that grouse constitute a negligible percentage of the bobcat's bill of fare. As regards deer, there is no denying that the bobcat shares the hunter's taste for venison. Yet much of the deerflesh, it has been proved, is eaten as carrion. And such deer as the bobcat himself kills are usually ones already wounded by hunters, or otherwise incapacitated. In winters of deep snow a deer herd in its yard might seem a banquet table for the bobcat. Yet even here, investigators agree, the victims are quite consistently the weakened and unfit. Even in Maine, with its heavily populated winter deer yards, although an occasional bobcat may haunt a yard, the cats in general are found to prefer the snowshoe hare as a steady diet.

Because of his habit of leaving a portion of his kill partially covered, some hold that the bobcat kills more than he can eat. But here again, it has been learned, he is merely storing up against future famine. Having satisfied his hunger of the moment, he endeavors to hide the remains, returning as his appetite dictates. In fact, such kills are sometimes utilized as bait by trappers.

Although, given the opportunity, the bobcat will include on his menu food items ranging from bluejay to house cat, he depends for his daily subsistence on the snowshoe hare in the northern parts of his range, the cottontail rabbit elsewhere, and always small mammals, worthless in the eyes of the hunter, such as the ubiquitous meadow vole. The bobcat eats what he can catch, and the catching is not always easy. The stomach of one cat, evidently fallen on lean days, contained no other food than the large cocoon of a *Polyphemus* moth.

The cottontail and the snowshoe hare populations, except at the ebb of the latter's periodic cycle, both have high recuperative powers, as shown by the heavy shooting pressure to which they are annually subjected. They are not likely to be decimated by the far less numerous roving bobcats. Yet the myth persists that the bobcat is a dangerous predator who threatens the hunter's bag. And thus ensues the reprehensible bounty.

Of the northeastern states, Rhode Island and New Jersey find the bobcat such a rarity that no bounty is





The Canada lynx is the bobcat's cousin. It is distinguished by its conspicuous ear-tufts, its black-tipped tail and by its usually much heavier coat of fur.

offered for it. In Connecticut some of the townships in the more rural sections pay bobcat bounties. Pennsylvania stopped bounty payments in 1937. And New York pays no bounty on any mammal. The remaining states all pay bounties. In New Hampshire the bounty is \$20; in Maine, \$15; in Vermont and Massachusetts, \$10.

To their credit, most of the fish and game departments of the several States recognize the evils of the bounty system. Bounties are imposed by State legislatures, the majority of the members being little versed in conservation matters. It is enough for them that the well organized and highly articulate sportsmen's groups condemn an animal as a predator. Then, too, the salaries in many fish and game departments are dependent on the license fees of these same sportsmen.

Despite this close connection, however, these State departments can, if they wish, work quietly on a campaign of conservation enlightenment. Witness the abolition of the bounty in New York and Pennsylvania. And in Vermont the Fish and Game Commission recently prevented the legislature from doubling the bobcat bounty. That alert service is now hopefully awaiting the day when all bounties will be abolished.

In contradistinction, the author of a weekly sportsmen's column in a western Massachusetts daily took

pains to announce that in 1954 New Hampshire hunters collected \$7780 in bounties on 389 bobcats, adding the wistful comment that the New Hampshire bounty is double that of Massachusetts.

Not only is the bounty system too frequently based on unsound premises; it is in many instances wide open to graft. Bounties on the same animal are sometimes collected in more than one township and, at State boundaries, in more than one State. Not all town clerks recognize the clipped eartip that, in the case of the bobcat, is usually evidence that a bounty has been paid.

But, whether or not a bounty is offered, no State protects the bobcat. For him there is no closed season. Always he is "fair game." Most so-called game species receive a modicum of protection, at least during the breeding season, if only, from the sportsmen's standpoint, to insure a continuing supply. But label a creature with the stigma of "predator" and every hand is turned against him. It matters not that the claims against the bobcat have not been proved, or that such reliable evidence as has been collected tends to show them false. Here is a creature free for the taking—in fact, often with a price upon his head—and no questions asked. Rather, the killer of a bobcat can bask in the smug satisfaction of having rid the countryside of a "varmint." Some seasoned hunters and trappers are not unaware of the false premises on which the bobcat's condemnation is based. Yet why should they trouble to change a situation that works to their advantage?

Even some game wardens have fallen for the predation myth. There is on record a particularly brutal killing by a Massachusetts warden. Cruising in his car, this man saw a small female bobcat, weak and emaciated, slowly crossing the road. He chased her, catching her

A trapped bobcat resents its capture. Trapping bobcats leads to considerable abuse of the questionable bounty system.

PHOTOGRAPH FROM U.S.P.I. DEPT. OF BIOLOGY



easily as she crawled under a hemlock, whereupon he clubbed her to death. This action was hailed as an important kill because, when the body was sent to the Massachusetts Cooperative Wildlife Research Unit where a bobcat study was in progress, it was found to be heavily infested with a mange mite, the only such infestation, incidentally, among some eighty bodies examined. Regardless of the importance of finding one case of mange amongst the Massachusetts bobcat population, the fact that the man had it in him to club to death a defenseless, dying animal shows only too plainly the sheer brutality that may be evoked by the term "predator."

To a certain extent the bobcat is trapped. And here the bounty system exerts an especially pernicious influence. For the bobcat's pelt, although used for trimming and occasionally for sports jackets, rates too low in cash value—only a couple of dollars for the best northern skins—to make his trapping a profitable enterprise unless there is the added inducement of a bounty. The traps used are wicked contrivances. Only heavy open trail sets will prove effective. In hunting country some trappers think twice before laying these sets because of the woeful damage they can inflict on dogs. As has been said, the bobcat is sometimes trapped near the remnants of his kill. Otherwise the most effective baits seem to be urine or catnip, that herb proving as enticing to him as it is to the familiar feline of the home hearth.

The hunter, however, is the bobcat's bitterest enemy. Bobcat hunting in certain sections of the northeast is a popular sport. Wherever the hunter meets him the bobcat is considered an enviable trophy. But in some States, New York for example, there are few packs of deerproof hounds. The true bobcat hunter uses dogs. As bobcats occur chiefly in deer country these dogs must be carefully trained or they will leave the trail of the bobcat for that of the deer. Veteran bobcat hunters and dogs may be found in the mountainous districts of New England. And these hunters, with the unappreciative thoughtlessness of those who think of wildlife in terms of gun fodder, hold the bobcat in high regard as game.

Bobcat hunting is a wearing-down form of persecution. Hunters and dogs run the bobcat until, exhausted, he is cornered and, although game to his last spitting gasp, coldly shot down without a Chinaman's chance. Snow is preferred for bobcat hunting because of the ease with which trails are picked up. Familiar with the terrain and the bobcat's range, hunters drive back roads in hopes of picking up a trail or, failing that, strike across country, snowshoes usually being the rule. The bob-

cat's trail is rambling as he will go out of his way to investigate anything that catches his interest. As with other cats, his sense of smell is not nearly as keen as that of the dog tribe. He hunts by sight and hearing. And he possesses as abundant curiosity as his domesticated cousin. Although, as a matter of subsistence, always on the lookout for food, when the bobcat starts potential prey he will not pursue it for more than a few bounds. If his initial leaps prove unsuccessful, he will turn back to his search for a more easily captured prey.

Once dogs and hunters find a trail and start their cat, a chase ensues until, should it be successful from the hunter's standpoint, the bobcat is treed and shot. The bobcat is a fierce fighter, a match for most hounds, but his instinct leads him eventually to tree, and treeing spells his doom. The chase may be long and hard. When started, the bobcat runs, if possible, in a chain

of small circles through dense cover. If not then a victim to the gun, he will head across country to another patch of cover. Although the cat tribe, including the fleet cheetah, is not built for marathon running, it is capable of short bursts of tremendous speed. In rugged, wooded country with abundant windfalls the trail is not infrequently lost. That is why those to whom this plucky native cat means only a trophy set a price above pearls on well-trained dogs.

The chase may continue for several days, the weary bobcat being driven to cover after a day-long pursuit and the trail being picked up at that point the next morning. One such chase in Massachusetts lasted five grueling days and its circuitous course covered some forty-five miles. When the desperate bobcat was (continued on page 108)

## IRONY ON THE BOUNTY

Doric pillars cut the raveling snow  
that would quickly cover  
three dead foxes in a woods.  
On the courthouse stair  
it silvers tails and haunches,  
and blend with blood, tint an impressionism.

*I saw a fox-ballet of fluid grace  
one evening I had fetched the cattle home.  
They played outside their crevice-den  
beneath a pigeon-school swimming in sunset seas.*

*I never came that near their mystery again. . .*

*They frisked along the hillsides  
and crouched for mice under vines and berry bushes.  
I caught their rusty flash  
among the hawthorns and clashing with the sumac.*

*Late in autumn clarion yappings at night  
stirred our dog to wishful baying,  
and me to bolting fast the pullet-brooder gate.*

The sportsman holds the door for County Clerk to pass,  
and then he kneels and parts the dancers' fur.  
Before he takes the check he slits each leg  
to indicate that bounty has been paid.  
He grasps the rope that binds the heads,  
throws them in a truck, and crosses to a tavern.

Edna K. Meudt



Two herpetologists admire a pair of diamondback rattlesnakes found courting near Rattlesnake Mountain, Arkansas, in 1932. Look closely and you will recognize, at the left, Marlin Perkins of the Lincoln Park Zoo and "Zoo Parade," popular TV show. At the right is Moody Lentz, assistant director of the Forest Park Zoo in St. Louis.

*On a barren Ozark hillside I saw*

## Rattlesnakes Courting

By JERRY GREENE

**E**VEN though I was gasping for breath while trying to trot uphill across a barren piece of mountainside just an hour's drive west of Little Rock, Arkansas, I had to come to a sudden stop when I rounded a knob and saw a beautiful pair of diamondbacks courting in front of me.

From what I have heard in these passing years, I must have been one of the few people fortunate enough to witness a pair of rattlesnakes in courtship. It was one of the most amazing experiences I have ever known, including service in the Marine Corps. And when I interfered with the wooing enough to bother the intended papa, he chased me a good twenty yards down the mountainside. Dr. Raymond Ditmars records that the king cobra will chase a man, and has written that this is the only snake that would be so mean.

I can report that a diamondback rattlesnake, if you interrupt his courting, will take off after you in a hurry, and it is no fun if you have no place to go, no tree to climb, no stones to throw and no sticks to use in defense.

I survived the chase and the courtship, thanks to an Ozark mountain boy whose name I do not recall, and

thanks to two of the nation's now well-known herpetologists, who, when the whistle blew, came over two miles of mountains and captured my irritated lovers. The snakes went to the Forest Park Zoo in St. Louis. Marlin Perkins, then head of the Reptile and Small Mammal House at the Zoo, and now the head man at Lincoln Park Zoo in Chicago and famed for his TV "Zoo Parade" show, was one of my affiliates in this event.

The other was Moody Lentz, now assistant director of the Forest Park Zoo, where he has worked since his graduation from college. Lentz was assistant to Perkins in the Reptile House at the time of this snake hunt back in 1932, and the two of them for many years made annual expeditions to replenish their own stock and obtain specimens for trading with other zoos across the country. They ran their two-man safaris from the swamps along the Mississippi in southern Illinois all the way to Central America. But Arkansas was ever a choice hunting ground, and rarely did they return home with less than 150 assorted snakes caught in a ten-day trip.

Lentz and I had gone to college together, and my own



snake-hunting days ran back to 1924. Each spring he would taunt a few friends into heading for the hills with him. At vacation time, in June, he would slash air holes in a suitcase, pack it with an accumulation of writhing and angry reptiles of assorted degree, and carry them off to the St. Louis Zoo as a gift. The Zoo people eventually rewarded his persistence with a job. He has been there since.

From watching Perkins on his TV show, it is obvious they have made some refinements in the art, or science, of snake catching, for Marlin now uses a fancy snap-hook, something like one of these artificial hands for amputees. In the days when I hunted with him, we used a simple, steel, goose-neck hook, flattened on the bottom and hammered into the end of three feet of broomstick. The new hooks clamp the snake gently but firmly just back of the head. Yesterday's hunter had to pin the snake's head against the ground—without injuring it—and pick it up by the neck with a steady right hand. It was a touchy business. Squeeze too hard and the snake is damaged; hold too loosely and the squirmer twists loose and you probably get bitten.

My job on the several expeditions I made with Perkins and Lentz was that of bag holder and porter. We used old flour sacks for the bags. The catcher held up the snake, full length, over the open mouth of the sack, lowered the tail to the bottom, then, in one lightning movement, threw the head downward, twisted the neck of the sack into a rope and tied a knot in it before the varmint could strike back upward. Then the bag man had to carry the load, ever careful to keep the thick knot between his hand and the exceedingly irked burden. The newspaper that paid my wages was sufficiently interested to assign me to a couple of these hunting trips. Others I did on my own time.

Probably every community in the Ozarks, and a lot of other places, has a Rattlesnake Mountain, and from past experience I would say that few of them ever harbored a rattlesnake. Lentz, a native Arkansan, had heard of this particular rattlesnake hill for years but had never been there. So in 1932 he finally persuaded Perkins they ought to try it. Actually, the place is little more than a dozen miles west of Little Rock, but it might as well have been a thousand. We left a narrow black-top road for a poorly graded dirt trail, stopped at a mountain cabin and walked and climbed for half an hour. The area was lumbered off a couple of generations ago, and in 1932 the jagged hillsides had nothing but spindly scrub oak, and not much of that.

The teen-age mountain boy we picked up at the farmhouse, where we left the cars, served as a two-way guide.



A general view of the Ozark region from the top of Rattlesnake Mountain, where the author went with his two snake-collecting friends in 1932.

He got us to the mountain some four or five miles away, and he steered us away from the areas where we could detect the overpowering odors of sour corn mash coming from a couple of gullies not far from a sparkling little creek. He swore there were plenty of rattlesnakes on the mountain and he was right.

Snake-hunting is at its best in the first warm days of early spring, when the reptiles spend a week or two crawling out of their dens and stretching out nearby in the sun for a few hours around midday to thaw from the winter's nap. Later, when they have become acclimated, they begin to roam and forage, and finding them becomes a matter of almost pure chance.

This beautiful April day could not have been better. Almost immediately after we had puffed and scrambled to the top of Rattlesnake Mountain, Lentz and Perkins spotted and captured three excellent diamondbacks, each more than five feet long. Catching takes footwork that a fast lightweight boxer would envy, for the snake almost invariably, when close to its den, will speed for it and escape. If you can stop it and make it coil to strike and fight, it is easy; relatively, that is, for the snake picks the terrain and you get what is left.

I spent an hour or so at the mountain with the hunters, then had to head back to my car and return to town. The hill lad went with me to show me a shortcut and keep me from getting lost. Collecting had been good, and the experts wanted to keep at it for another two or three hours.

Since I was late, we would dog-trot where the ground would permit, then walk for a bit. The hillside where we met the courting rattlers had no name and we were trotting around a sloping knoll half way up when, suddenly, there they were. It was no proper place for snakes. They were a good forty yards from anything like a boulder, or anything else (*continued on page 108*)



*We fight outdoor bad manners  
with the Litterbug and Smokey  
Bear, the Dane with the—*

## "Forest-Pig"

By RICHARD W. WESTWOOD

WHEN we hear of and see litter in the outdoors, vandalism in parks and other recreational areas, carelessness in the forest, and outdoor bad manners generally, we may think that these are problems peculiar to the United States. We have created the "Litterbug," a thoughtless and unsavory character, as a symbol of what not to do outdoors. Smokey Bear carries the message of proper use of our forests, and has become an important public educator. Thus we seek to meet these problems.

However, Americans are not the only people whose outdoor manners need the attention of an Emily Post of the open spaces. The Danes, a neat and progressive people, have been confronted with the problem, also. To meet it the Friluftsrådet, or Open-Air Council, one of the members of the International Union for the Protection of Nature, established a special Tourist Culture



A Danish Boy Scout travels by plane with a forest-pig to a Danish community, where the pig will be met by a special delegation and his quite unsavory habits given proper publicity and the symbol of outdoor bad manners safely caged.

Committee. This committee brings together outdoor, Nature, conservation, civic and business groups, much as Keep America Beautiful does in the United States. Symbol of this campaign is the "forest-pig," a creature with a human body and an unmistakably porcine head.

This now famous Danish animal was created several years ago, and is today known throughout that little country as a creature that no one wants to be like. First made in a plaster cast and then in rubber, the forest-pig, singly or in numbers, was placed in cages at the entrance to Denmark's recreational areas. He was caged to show that creatures with such low instincts and evil outdoor habits are safe only when caged.

Danish Boy Scouts have entered enthusiastically into the program, touring about in open cars with the pig and displaying slogans urging that he be outlawed.

At the left the forest-pig is hoisted to the top of a pyre that will be lit on Midsommersnight's Eve and this Danish version of the Litterbug burned. Below, forest-pigs languish in a cage at the entrance to a Danish recreational area, being thus imprisoned to demonstrate that forest-pigs are only safe when caged.





Colorful stamps and posters are issued by the Open-Air Council to carry the story of good manners outdoors. The stamps are distributed through the schools and otherwise, and the posters put up in railroad stations, and other places where their educational message will receive attention. Left and right, the message is "Be good with Nature," and the forest-pig stamp in the center asks: "You? No!"

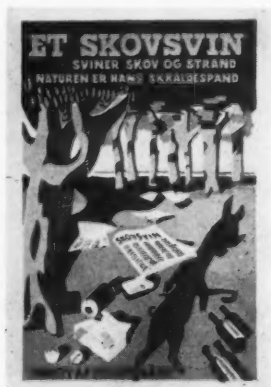
Scouts travel with the pigs by train and airplane to various parts of Denmark, with resultant good photographic "copy" for the newspapers, which have cooperated fully. When the pig arrives in a community he is received by the local Scouts, sometimes by a local band, and conducted to a cage. Midsummers-night's Eve is the occasion for ceremonial burning of the pig, with speeches by local leaders and with other festivities. A big bonfire is held at Klampenborg, near Copenhagen, with addresses by the ministers of education and with a broadcast of the event.

A most recent use of the forest-pig idea has been to give pig masks to boys and girls visiting forests, beaches and other recreational areas. With these labels are supplied saying: "I have been a pig, now I have to collect others' litter." Thus adorned, the youngsters go about picking up paper and other litter discarded by humans who have acted like pigs.

Stamps, such as those shown here, are reproduced in color and blown up as posters. These are placed in schools, youth hostels, railroad stations and at other strategic spots. The stamps are widely distributed and school youngsters cooperate by placing them on their book covers. School cooperation in this program has been outstanding, and reflects the conviction of the committee that if forest-pigism can be wiped out among the rising generation it can be outlawed throughout the country.



This stamp says: "So You are not acting, or are you?"



"A Forest-pig dirties forest and beach. Nature is his dust-bin."

Each year the committee asks the authorities in certain forest districts to provide detailed reports on damages done by forest-pigs on a specified Sunday. These reports are passed on to the newspapers and widely publicized. Special excursions are arranged for newspapermen, who respond enthusiastically, to visit areas and see firsthand the results of the pigs' work and the need for reform.

Chairman of the committee in charge of the program is Frede Lauritzen, a dedicated public school teacher and biologist. He says that the origin of the name "forest-pig" is uncertain, but the idea of personalizing the creature came from the committee's volunteer publicity adviser, Mr. Salomonsen. Included in the educational program are motion pictures and slides about outdoor "pigism." These are shown to a wide variety of groups. Broadcasts are also frequent and television a handy medium.

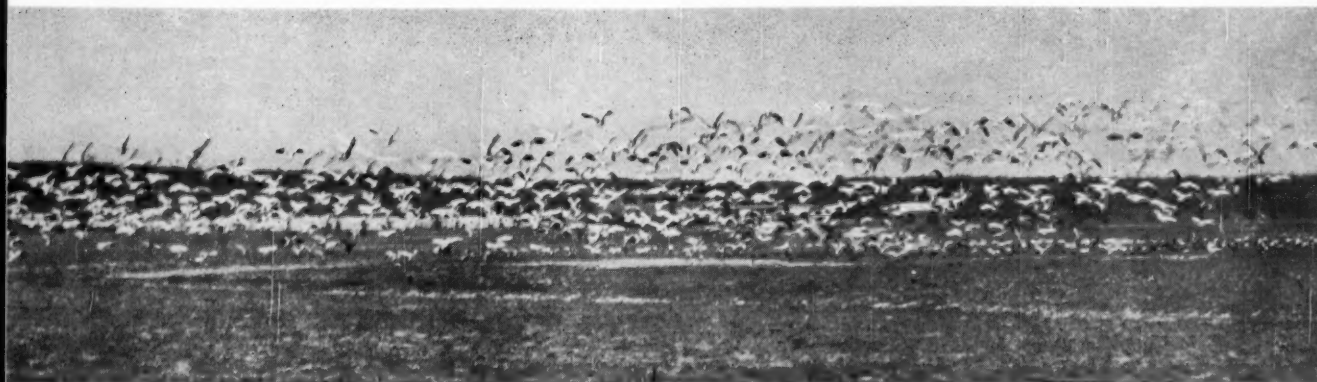
Definite improvement in the public use of outdoor recreational facilities has already been seen as a result of the public education inherent in the forest-pig program. But the plan will be carried on, with new ideas and variations on the basic theme of outdoor good manners. The Open-Air Council is dedicated to wiping out forest-pigism in Denmark, while Smokey Bear and the Litterbug carry on their own educational programs to a similar end in the United States. ❀ ❀ ❀

*One man's vision and persistence achieved*

## The "Miracle of McAlester"

By MARIAN ROGERS

*Official U. S. Navy Photographs*



Snow geese, blue geese, white-fronted geese and Canada geese awing at the Navy's McAlester ammunition depot in Oklahoma, twelve years ago a wasteland and now a wildlife refuge for many birds and mammals.

**I**MAGINE thirty thousand ducks in their right minds resting near tons of live ammunition without ruffling a pinfeather, or deer casually scraping their antlers on the target frames of a rifle range?

Such things happen on the U. S. Naval Ammunition depot at McAlester, Oklahoma, the last place on earth you would expect to find wild animals. But TNT and wildlife rub elbows peacefully at the nation's first military reserve to become a federal wildlife refuge.

Fantastic? The U. S. Navy thought so, too, until C. D. ("Seedy") Johnson, depot maintenance superintendent, wrapped up grass, animals and gunpowder in one economy package. Today the Naval Bureau of Ordnance is surveying other properties as possible refuges, hoping to repeat "the miracle of McAlester."

"Seedy" Johnson did accomplish a miracle. Twelve years ago the depot was a wasteland. The 45,000 acres were a grass-forsaken mess, hideously eroded and so barren that no self-respecting animal or waterfowl came near the place. The Navy bought the ruined land dirt cheap and turned it over to Johnson's care, asking only that he keep the depot in first-class condition. What the Navy did not know was that its new maintenance superintendent had special plans.

A decade later both the Navy and Johnson have what they wanted. Underground, the depot works full-time as a deepfreeze for every conceivable type of naval ammunition. Above ground a dozen varieties of wild animals roam now lush pastures and wooded sections. Wild turkeys feed beside magazine covers. Canada geese

honk within earshot of the administration building. Quail have the right-of-way over four-wheeled traffic; drivers stop and patiently wait until Mrs. Bobwhite and the kids get safely to the other side of a road. Beavers compete with bulldozers to see which can move dirt the fastest. Ducks wet their feet in ponds that were once bone-dry gullies. Fields of corn and wheat have supplanted cockle-burs.

Deer amble across the rifle range, where Marines look at them through their gun sights and aim at the targets instead. The McAlester depot is a happy no-hunting ground for its wildlife population. Depot personnel are so fond of the animals that they make pets of the more venturesome ones, even digging down in their own pockets to buy special feed for them. Each winter Johnson's staff provides a supply of hay for the deer during the colder months. They also chip in their cash for salt licks, put out where the bucks and does can easily find them.

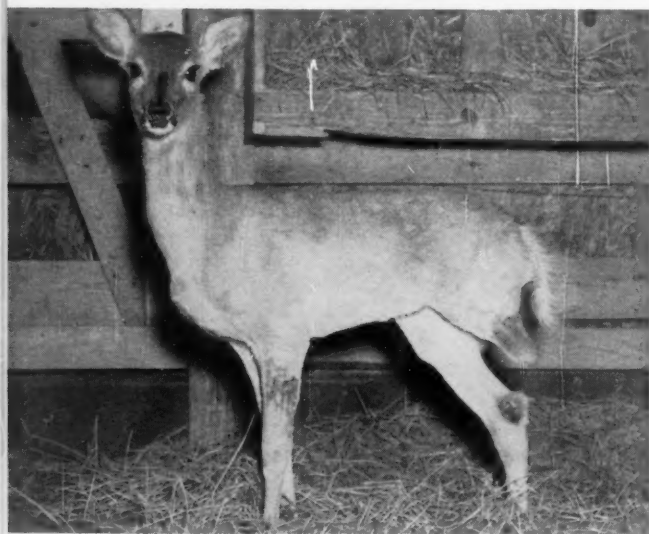
Nothing like it has ever been done before with military land. Many times Johnson thought his unorthodox conservation plan would fail. He kept his experiment from the attention of Washington naval ordnance heads over a five-year period because he first wanted to prove such a plan would work.

Next "Seedy" spent another five years convincing the ordnance brass that wildlife and gunpowder on government property was a practical idea. In 1953 his ten-year gamble paid off. The heads of the ordnance department and the U. S. Fish and Wildlife Service signed an historic





A young deer got so badly tangled in the wire of a fence that amputation at the McAlester Dispensary was necessary.



Recovered, the doe has produced several sets of twin fawns since 1948 and was still alive and doing well in 1955.

document, agreeing to maintain the depot as a wildlife sanctuary for the next twenty years.

Johnson's selling job to the Navy won him a Nash Conservation award in 1954, a highly coveted honor. Yet he has never had a formal conservation lesson in his life.

The depot superintendent hitched his star to a plow 57 years ago. From the time he was big enough to work on his father's Oklahoma farm, Johnson was taught to care for the land that fed him and for the wild creatures inhabiting it. A four-year hitch in the Navy failed to sidetrack the driving force in his life. He began studying engineering in 1922, and worked up to "super" at McAlester through a series of public maintenance jobs.

When Johnson first toured the McAlester depot, he saw instantly that the sprawling acreage could be made into wildlife habitat. The man's green thumb began itching to put the depot into double-harness instead of

permitting it to "loaf" on the public payroll. But could he patch it up enough to make wildlife stay? Water was scarce and the few isolated ponds provided no food for waterfowl. Lakes would have to be constructed and the water controlled. The rain should be stopped in its tracks instead of letting it run off. Coaxing back the grass would be a big job. Then to cultivate, seed, irrigate; give Nature a chance. Later a few selected animals of different species could be turned loose to see if they would survive.

Financing a munitions menagerie presented no problem. Johnson planned to spend his yearly maintenance budget to make every dollar do the work of two. So long as the wildlife program also accomplished the job of halting soil erosion, the depot commanders had no objections. Not one extra cent was spent.

Such was the backbone of Johnson's program. Construction projects and their by-products were used to benefit wildlife in some manner. Dirt left over from grading rail and road networks was used to fill in washouts, then planted to some crop that would provide feed for wildlife. Along the banks of 650-acre Brown Lake, an artificial reservoir constructed as the depot's water supply, Johnson planted bulrushes, sago pondweed, smartweed, duck millet and other aquatic plants as a lunch counter for ducks.

Ponds were dug by Marines learning to operate bulldozers. Before Johnson launched his double-barrelled program, Marines dug holes and then refilled them. This smacked too much of a WPA maneuver for the tight-fisted superintendent. Now he has the Marine operators learn their lessons by digging ponds at strategic spots for ducks, geese and fish. The depot is now dotted with 65 farm ponds and three lakes, well-stocked with bass, crappie and catfish. Names of the lakes reflect the military aspect. A favorite spot for beaver, among the first animals transplanted to the area, is Rocket Plant Lake.

Soon the new grass, lakes, corn and wheat fields began attracting waterfowl. Wildlife authorities estimate that by 1960 more than 50,000 geese and 200,000 ducks, drawn from the Mississippi and Central flyways, will be on the grounds.

At the flap of the first wings, Johnson put out Canada geese as decoys. Here he received one of his rare setbacks. Cold weather froze lakes and ponds, exposing the birds to predators, which are thinned out when necessary by a government hunter.

Johnson doggedly tried again with geese, and succeeded. Next he experimented with wild turkeys, then gone from that part of Oklahoma. He ran into trouble because it developed that the turkeys had come from an infected flock. The wild birds died faster than they could be replaced. Johnson finally managed to keep a few alive from a second stocking, and the gobble of a wild turkey is now a familiar sound on the depot.

The most ambitious project was with white-tailed deer. Thirty-five animals were delivered in 1947. The latest tally numbers 1200, and the reserve has sufficient browse for fifteen times that number. Deer by the hun-

dreds have jumped over or crawled under the fences, escaping to the surrounding area. Johnson's most embarrassing moment was caused by deer. Several years ago a visiting admiral stood outside the commanding officer's home, hands clasped behind him. As he good-naturedly needled the C.O. about the danger of deer herds on a military reserve, a pair of bottle-fed orphan deer slipped up astern and mistook the admiral's thumb for a nipple, taking hold with a vengeance. The admiral gave a magnificent roar and jerked the thumb away, suffering a wrenched finger but no loss of dignity since he was fortunately equipped with a sense of humor.

In 1948 Johnson decided that he could not keep the project on an unofficial basis any longer. It was getting harder to parry questions about the number of deer who, Johnson explained, apparently had wandered on the reserve "by mistake." He began plodding through channels to bring together contacts in the ordnance bureau, the Fish and Wildlife Service and interested State and national organizations. He wrote hundreds of letters. While the depot's commanding officers thought Johnson's idea had merit, he received no public support from Navy or depot personnel until Washington approved the conservation project.

The Superintendent became a walking-talking advertisement for "wildlife plus war implements" equal savings for the American public. No visiting naval officer was too high-ranking for Johnson to approach if the officer indicated the least interest in the project. He bluntly stated that it was criminal to let McAlester's land stand idle when it could substantially help build up the State's badly decimated wildlife population. Here was a chance for the Navy to give the American people the greatest gift that a government can bestow; double value for every dollar invested in Navy-operated land.

Skeptical at first, the men Johnson saw during his five-year selling campaign did listen to him. They noticed that his eyes had a glint in them, the look of a man who loves the land and its wild creatures. After what seemed an eternity, the Navy gave its blessing. Guaranteed twenty years of government management, the McAlester depot is rapidly becoming a magnificent wildlife sanctuary. The U. S. Fish and Wildlife Service now is in sole charge of the refuge as pertains to birds, mammals, fishes, clearing ponds, and other wildlife management detail. Johnson functions as a sort of "liaison officer" between the commanding officer and the government agency, responsible for all conservation improvements since 1953.

This includes several research projects now booming on the depot. Four hundred acres have been set aside for an intensive study of quail, conducted by State experts. Eventually the wildlife agency plans to make the animal arsenal into a trial breeding ground for scarce species. Presently Johnson is keeping an eye on four prairie chickens turned loose to see if they would live on the depot.

Johnson's pioneering venture is paying big dividends. The ordnance bureau has issued a bulletin, asking all



A pair of orphaned fawns being fed and raised by the daughters of the commanding and executive officers at McAlester.



Beavers were the first mammals to be transplanted to the depot and now vie with bulldozers at tasks of moving dirt.

depot commanders to evaluate each site as future wildlife refuges. And those originally opposing Johnson's three-way conservation bonanza are his strongest supporters, particularly the ones who grumbled that the animals would get all the care while maintenance would be neglected.

No prediction ever fell flatter; the McAlester depot is one of the best-maintained in the nation. In addition, a wildlife sanctuary provides perfect camouflage.

Not all Uncle Sam's military acres can be wildlife sanctuaries. Ordnance depots are the most logical sites since large troop movements or artillery testing would disturb the wildlife. However, the U. S. owns dozens of Army and Marine bases whose barren and wildlife-abandoned acres would benefit from Johnson's conservation common sense.

If "the miracle at McAlester" can be repeated on a wide scale, this nation's wildlife program will get a shot



Wild turkeys now gobble in the McAlester depot-refuge. Here three of them are unconcerned about the store of high explosive under ground in the grass-grown mound at the right.

in the arm. Nothing would please "Seedy" Johnson more. Such is the dream of this man who gave ten years of his life to convince the U. S. Navy that a deer, a

beaver, or a mallard duck is as important as a five-inch shell or a rocket missile, and that live animals and live ammunition can occupy the same place. ❀ ❀ ❀

## Gold in the Lowlands

By RALPH J. DONAHUE

*Photograph by the Author*

**N**O BRIGHTER floral gold is to be found anywhere than in the color of the rays of the long-bracted tickseed sunflower, *Bidens polylepis*. It is a vivid orange-yellow that gives the impression, when viewed in the sunlight, that it has a self-luminous quality. Some of these flowers are more than two inches across.

The flowerlet cluster, about which the rays extend, is a rich greenish-brown, flecked with grains of gold. Both wild and domestic bees, bee-flies, certain of the wasps, and many butterflies find evident delight among the nectar cups of these flowers. The oddly shaped akenes, or seeds, of this plant distinguish it from others. These seeds, each armed with twin spines, and each spine barbed for attachment to the hair or fur of passing animals, give the plant its common name of "tickseed."

This tickseed favors low places and moist ground,



roadside ditches and the like. It may reach a height of thirty-six inches, its widely branching stems crowned with numerous flowers. These bloom from August until late in October, and a field of these brilliant golden marsh-dwellers is beautiful and truly provides a picture that can be called "gold in the lowlands." ❀ ❀ ❀



# Wild Animals that Came to School

By DOROTHY M. COMPTON

*Teacher of Elementary Science, Princeton, N. J., Public Schools*

THE NEW elementary school principal was speaking at the opening meeting of the P.T.A.: "The things your children bring to the Science Room are amazing. Today it was a dead skunk. Tomorrow I suppose it will be a dead cow."

The cow never appeared in totality, but its skull and a hip bone eventually did. The skunk made its contribution to education from outside one of the Science Room windows and was then buried in the compost heap in the school garden.

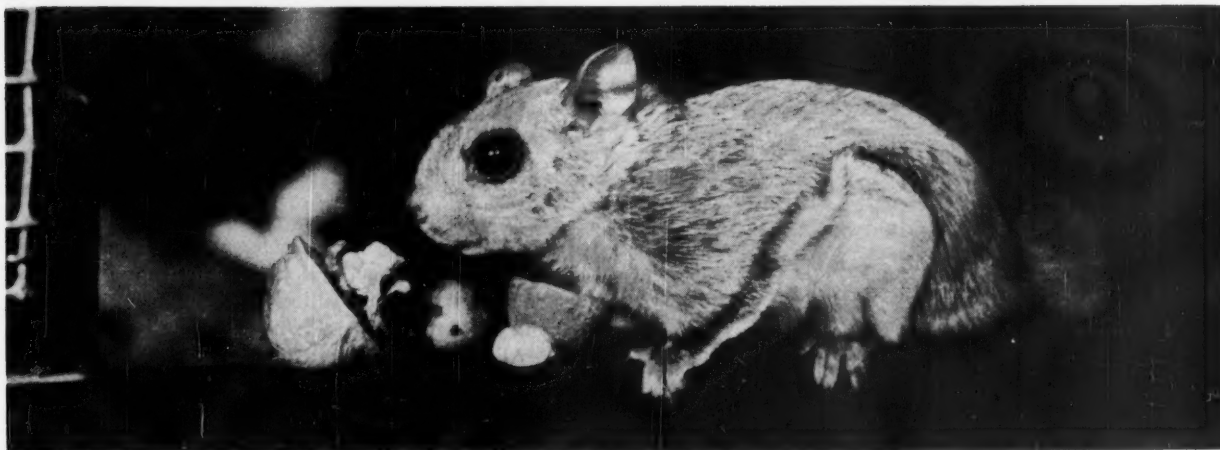
Yes, children bring things—animal, vegetable, and mineral; living and dead; modern and prehistoric; morning, noon, and occasionally night. They want to share their treasures, and to ask what and why.

Over the past thirty years of science teaching, representatives of all the major divisions of the animal kingdom

have come to our Science Room, some for temporary and some for permanent homes there. One morning a child will be waiting at the door with a shiny green beetle, found climbing on a playground tree and carefully put into a box punched with airholes. Another day we find a bag left on our desk, with a little slip of paper beneath—"From Paul." We peep in cautiously, not knowing whether a grasshopper will leap forth or a tiny baby bunny crouch fearfully in a nest of grass. Or, as the room door is opened, a box turtle may be seen crawling awkwardly off behind the bookcase. A few minutes later Tommy calls in, "Did you find my turtle?"

The number and variety of these living creatures is astounding. Only an outstanding few were photographed. Some of those whose "personalities" seemed to demand such recording are shown and described here.

GENTLE "Timmy," a flying squirrel brought as a baby from Michigan, was my favorite of all our mammal pets. It was so tiny and appealing, with such soft fur and such big eyes. During his first year with us we made the discovery that, like humans, squirrels shed their baby teeth and grow a new set. This happened to Timmy in early March. Summers he was taken to Scout camp, and there he put on a delightful performance each night. The Nature house was always crowded with volunteer moth catchers after evening session. Timmy lived with us for three years, and there were some tears shed when he died of old age.



Since Timmy was a captive and therefore unable to do his own hunting for winter supplies, we helped him. One September morning he took an acorn from the hand of each child in a third grade class, scampering up the branch to store it in his nest box, then whisking back for another. Timmy was often let loose for a romp in the room and was never hard to catch when it was time to return to his cage.

**T**WIN storm-orphans were brought in with their eyes not yet open one spring. They took readily to the medicine dropper milk bottle. The twins provided much diversion in their big cage for a full year before they were released. Both boys, they wrestled and chased each other like two human boys on the playground. We often had to stop our class and just watch. Or listen to the scraping of little teeth on a walnut shell. Do animals in the classroom distract from other work? On the contrary. When is what the teacher is saying as important as what the animal is doing? We all digress together, and then return refreshed to the point under discussion. Their presence is a calming influence, also, when extra excitement borders upon undue noise, and might frighten the animals.



Frisky prospered on the medicine dropper and grew to become so tame he could be trusted to return to his cage after a frolic in the room. Feeding young mammals means, of course, that someone must take them home for evening feedings at first; usually the teacher's task. Frisky became a willing subject for a Christmas card. The pine branch is only scenery; he is really eating sunflower seeds.



**O**NE spring a pair of sparrow hawks selected a nesting spot under the eaves of our school building. Daily the parents flew over the circles of "Farmer in the Dell," or "Skip to My Lou," on the playground, crying their "Killie, Killie."

But on a cold, rainy day late in May, the nest was washed out. One by one, four babies were brought in—cold, wet, and half dead. We wrapped them in cotton to dry and warm them, then sent a committee to the store across the street for raw beef. Strips of this, dangled enticingly, brought no response. In desperation, a bill was pried open and meat poked in with the blunt end of a pencil. It was swallowed! The infant came to life and yelled for more.

All of the three that lived were released at the close of school, late in June. They could fly well by that time and could easily tear meat apart. But could they catch food on their own? I am afraid, after longer experience, that we saved their lives only to free them to become food for enemies, or to starve. It is hard never to know what happens.

**F**OURTH-grader Nathaniel and the baby screech owl that Nathaniel's classmates were trying, unsuccessfully, to feed corn bread! At the suggestion that the bird might like raw meat, one youngster promptly went home and got some. On this diet, with a few mice caught in home traps, the owl thrived and grew. There was much excitement when the children gathered to watch it swallow mice whole, and then to learn to examine the pellets later.



Michael's "lost" baby starling.



**E**ACH spring we try to anticipate the leaving-the-nest season and explain that lone baby birds with no parent obviously near are not necessarily orphans needing a foster parent. We point out that the baby should not be disturbed or moved, and that it is extremely hard to raise a baby bird, because of the frequency of meals needed and the difficulty of getting the natural food. We tell the children that the bird needs its own parents to teach it the ways of the wild bird. But a spring never passes without one or two of these babies. The cat was just about to pounce, the child reports, or the dog actually had the bird in his mouth. So we are off again, to the garden to dig worms, and to the kitchen to put on an egg to boil.

Jimmy's baby robin was one of the few that survived. He was taken to summer camp and, after two weeks of cage orientation, was turned loose, early in July. For two weeks he came to the Nature House daily for worms and cherries and water, often perching on campers' fingers for feeding. We thought this was one time we had scored a success, but, during a prolonged spell of rain, "Robby" disappeared and was never seen again.



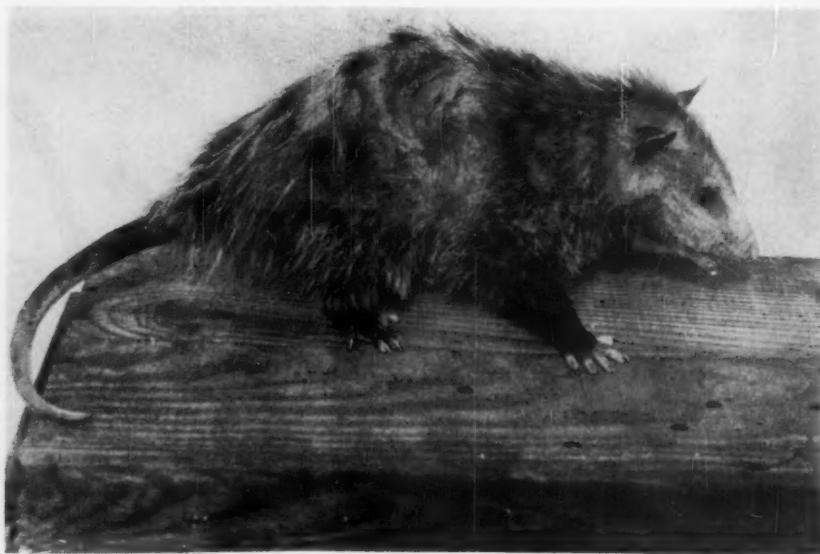




We seem to have had better luck with young rabbits than with baby birds. All six of a family plowed up in a teacher's garden and raised on the medicine dropper lived to be turned loose in the summer.

UNLIKE baby birds, the bunnies do need foster care. The mother rabbit refuses to come back if there is the least disturbance of the nest. One spring we found a furry nest in our compost heap in the school garden and immediately covered it as it had been, *not touching a baby*. Yet, next morning, there were four cold, stiff, dead babies. Since then we have no qualms about adopting these youngsters. I believe, too, the rabbits have more chance of surviving when released. Their food is abundant and easily obtained. The instinct for hiding is well developed, and they soon establish a spunky independence. Try to find one that runs off into the flower bed when you try to photograph the bunch!

Liberty Hyde Bailey wrote: "In the early years we are not to teach Nature as science, we are not to teach it primarily for method or drill: we are to teach it for loving—and this is Nature-study. On these points I make no compromise."



WHEN so many of the pets die, (perhaps even the ones that are released), is it fair to cage a wild animal? If it means taking a baby animal from its home for the purpose, I think not. But if it is an orphan and needing care, it seems heartless not to give it a try. And I think they serve well while they are in the classroom educating our children. We can read in books that opossums use their prehensile tails to carry leaves into their dens, but how much more valuable a learning experience when we saw "Susie," the opossum, dragging a wad of newspapers in her tail, up her branch to the cage nest box.



**K**INKY came to visit us one spring. A sailor, friend of a family of four pupils, had brought him home from Ecuador. The following fall we were offered the opportunity of purchasing him for five dollars, the amount of his entry fee into the U.S. More than 200 children wanted him badly enough to bring from one to five cents each, so a homey cage, built by the pupils'

father, came to our Science Room with its kinkajou.

Like the flying squirrel, raccoon, and opossum, Kinky was nocturnal. We missed his most active period. Yet he never seemed to resent being awakened for daytime attention. The children took him for a walk, holding him by the prehensile tail as a handle. Even when they took him outdoors, he made no attempt to escape.



This woodchuck was raised by a college natural history class, but we had a full grown one in our Science Room for a few days. An S.O.S. arrived from the Bell Telephone Company. A strange animal had fallen into a window-well there, and did we want it? And so we became acquainted with another wild species, learned to respect the gnawing teeth with which it scraped carrots, and then released it to a better habitat.



Two of the best assistant science teachers we ever had were two large snakes—a king snake (above) and a pine snake. Children, and many adults, learned from these snakes a respect for these too often mistreated and

disliked creatures. Never was a child forced to touch a snake if he did not wish to, or laughed at if he did not. At the first introduction, I held the snake loosely, so that it could crawl through my fingers. As it was carried around for a closer look, the children were shown how to smooth it in "slow motion," and not to frighten it with sudden pokes. Those who wished would feel the rippling of muscles on arms or fingers, or the squeezing of the king, a constrictor, coiled around an arm. My handling of the snakes was always very matter of fact, never "showing off" by wearing it as a necklace, although later the children sometimes did so. Soon, mornings, in the short period before the "last bell," the Science Room was crowded with pupils taking turns holding the snakes, the white rats, or other room pets. They learned how to hold the animals without squeezing or frightening them. It is pretty safe to generalize that all the children liked snakes. A few teachers, however, could never be converted. We did not get them early enough.



The pine swift, common New Jersey lizard, was brought by a professor's son and arrived labelled with its scientific name, *Sceloporus undulatus*. →

A pet horned toad, sent by a southern relative of one of our pupils, came to school accompanied by a dollar bill to buy its mealworms.



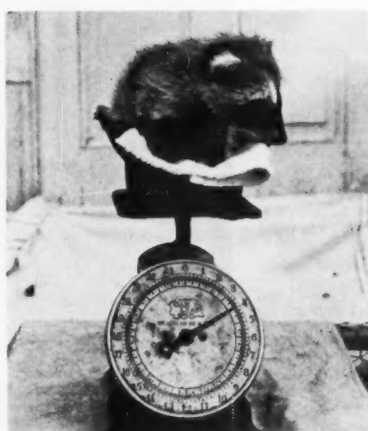
From time to time a baby alligator like "Oskey" appears at school. Lying half or wholly submerged in the shallow water of its cage, eyes closed, some child will exclaim: "The alligator's dead!" A cautious poke with a finger will soon disprove this and lead into a discussion of protective coloration, and how resemblance to an old log may help the alligator by permitting its prey to approach close enough to be caught.





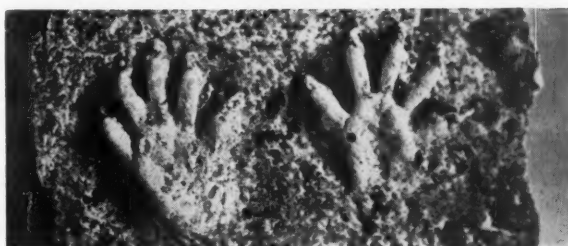
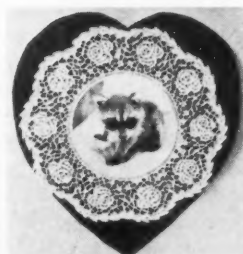


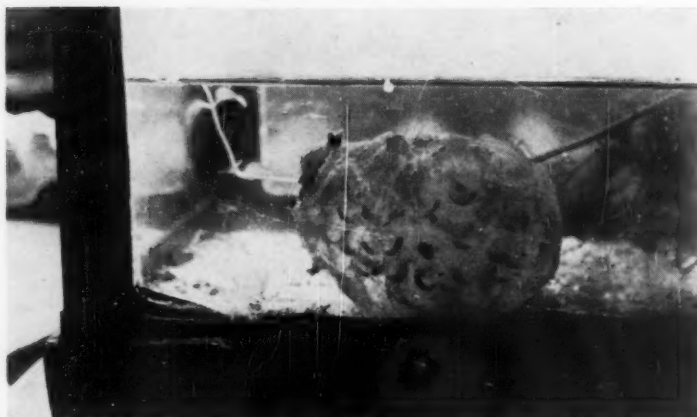
Children love box turtles. They accept food readily, and are easy to care for. Counting the rings on the shell scales brings surprises when the turtle is found to be older than its discoverer. Here is a box turtle about 16 years old and a baby musk turtle. Water turtles like the young snapper at the left are more active and their feeding interesting. They arouse such questions as: How can they swallow under water? Why is a snapper's head so much larger in proportion to its body than with other turtles? Which is the most aggressive turtle?



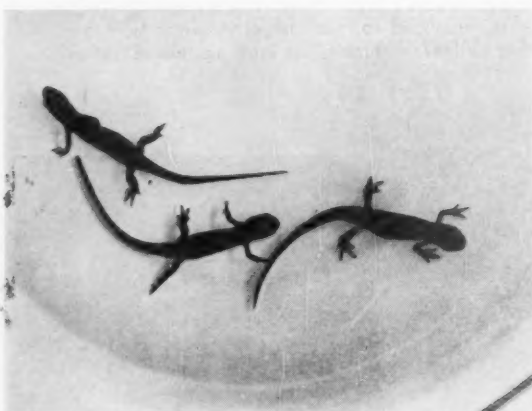
"Seampie," the raccoon

SCAMPIE was the gift of a farmer friend. Being a game animal, a permit was required to keep him as also with the gray squirrels and cottontail rabbits. When small he had to go home nights for additional feedings, but was always eager to get out of his box. Scampie took part in many school activities. A record of his weight was kept on the school children's weight cards. The fifth-graders rotated volunteer committees to care for Scampie's cage, after proper training. On Valentine's Day he sent cards to his care-takers. When he left his footprints in the school garden casts were made of them. When his permit ran out the whole school voted on what to do. The vote: Turn him loose in a safe place, 177; send him to a zoo, 136; keep him at school, 88. So Scampie went to Parvin State Park, where the park ranger and I watched him disappear into a swamp with no backward glance.





To be able to see what goes on inside an egg is one of the special delights of the amphibian group, as with the developing larvae of a mass of spotted salamander eggs at the left. Carol's young toad (above) had to have moisture in its cage to survive.



At first the children called the salamanders lizards. Our newts, however, showed them the difference, the thin moist skin of the amphibian being so different from the thick, dry, scaly skin of the reptile.

Baby praying mantids hatch out in a terrarium. However, we keep most of our mantis egg masses outdoors. This is to prevent them from hatching during the winter when the emerging young would die for lack of suitable food.



**S**OMEHOW my photographic zeal overlooked the hundreds of invertebrate creatures that have added interest to our Science classes—the caterpillars and other insects; the live starfish brought back from a shore trip to share with the class; the ghost crab that lived in a large aquarium in damp sand during a special study of

New Jersey sea life, dug its burrow, and scuttled around on its "tippy toes"; the sunfish roe from the results of a fishing expedition; the queer gall formations on plants with their minute inhabitants, and many others. Is there anything alive in which children are not interested? The answer is "NO!"



# Water—Our Vital Resource

## An Editorial

**B**OTH THE use and the abuse of water pose problems of utmost importance to the people of the United States. This, it would seem, should be obvious to any thinking person. Yet the manner in which we continue to waste water and pollute our streams with human and industrial offal seems incredible in this day.

In most parts of our country underground water tables are falling. Our reserves of water are growing less and less in the face of rising population and increasing demand. Land abuse, also, is depreciating the value of watersheds in their natural function of holding and containing water. Yet we continue to waste water.

Beyond this is the tremendous problem of pollution, which is reducing our supply of usable water, causing serious threats to our national health, and drastically upsetting relationships between water, soil, forests and wildlife. The time is long passed when communities and industry can properly use our streams as a convenient dispose-all for their wastes. Yet we are only beginning to face up to the situation and are sadly lagging behind in the dire need for action.

Meeting the pollution problem is both a health and conservation challenge. It is expensive. It is an issue that is found on the doorsteps of States, groups of States and the Federal Government. It is too often and too widely an orphan, left to howl hungrily and unsatisfied on these several doorsteps.

Basically and ideally, the problem of pollution should be solved by the States within which the polluted waters are found, or by groups of States sharing streams carrying the pollutants of various kinds. But there is also a responsibility of leadership on the part of the Federal Government in meeting the issue. The threat of the failure of that leadership faces us today because the act to control pollution on a national basis lapses in mid-1956.

Since the administration of pollution control on a Federal level rests in the United States Department of Health, Education and Welfare, a group of conservationists representing the Natural Resources Council of America recently met with top officials in that Department. This group pointed out certain startling facts:

"The population of the United States doubled from 1900 to 1950. During the same half-century the percentage of our people living in cities increased from 35 percent to 65 percent. The Bureau of Census has estimated that by 1975 the population may reach 210 millions.

"We had seven times as much industry in 1950 as in 1900. The present rapid expansion of industrial produc-

tion is a source of pride for all Americans. By 1975, the Bureau of Census estimates, the increase will be 1400 percent over 1900.

"Our water needs are increasing equally fast. In 1950 Americans were using 175 billion gallons per day. At this rate we'll be needing 350 billion gallons per day by 1975."

These are figures that should make us stop and ponder—then act. They must be considered in the light of other statistics. For example, in 1920 the amount of municipal sewage being removed by treatment was equal, in total, to the wastes from six million people. In 1955 this treated volume was up to a population-equivalent of forty millions. *But* during the same period the amount of human sewage getting into streams untreated increased by 30 percent, and the untreated sewage is equal to the wastes of fifty-five million people. Treatment of industrial waste lags even farther behind; in 1955 it was equal, in deteriorating effect, to the wastes of 110 million people.

The Eightieth Congress passed the Taft-Barkley Bill, which became Public Law 845. It placed the primary responsibility upon State and local governments. The Federal Government was given the task of stimulating, of coordinating, of research and surveys and of enforcement only in cases of interstate water pollution not corrected by State or interstate action. Congress, however, failed to appropriate the funds authorized under the Act beyond what can properly be described as token funds. The stimulation of pollution control became, therefore, token in proportion.

Some States and communities are meeting the challenge, but action is spotty. Municipalities have done the best job and spent the most money, but State funds spent by State water control agencies still are far behind the need. Although the Taft-Barkley Act authorized appropriations of \$216,000,000 over the span of its eight-year existence, only \$11,350,568 were actually appropriated.

At the first session of the present Congress S.890, extending the present Act, passed the Senate but failed of final action by the House. It is still pending and has been amended in certain details to weaken provisions both for grants-in-aid and for enforcement.

Therefore one of the most important pieces of legislation before the Eighty-fourth Congress is the enactment of a strong law that will give aid and encouragement to pollution control. This is essential for the public health, for continued prosperity, for national defense and for the safety of that most vital natural resource—water.





PHOTOGRAPH BY DWIGHT KREHBIEL

The many school groups that come to the museum are Curator Kauffman's delight. Here grade school pupils from Wichita, parents and teacher, listen to the story of a tiny fawn.

*A South Dakota boy's collection grew to be*

## A Museum that Went to College

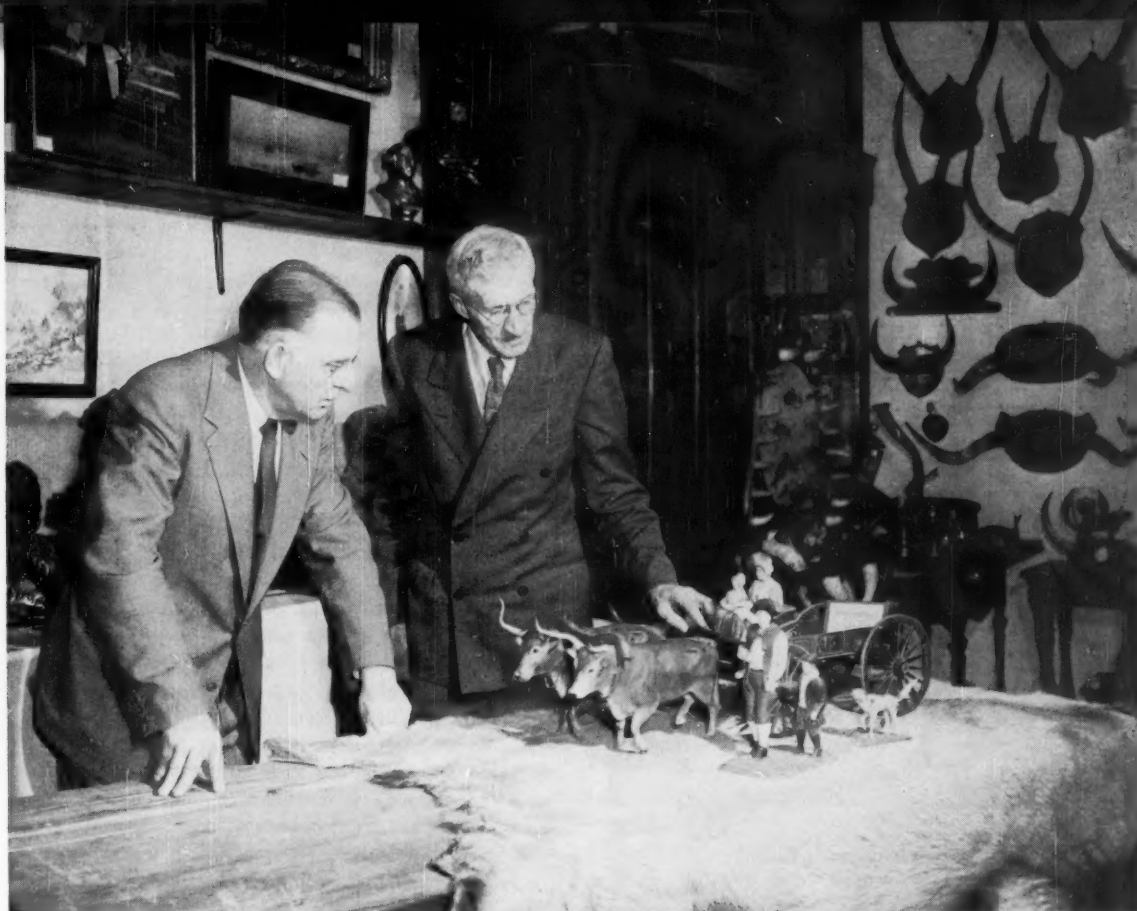
By EDNA L. RUTH

THE LITTLE boy trudged manfully to keep up with his father's long strides. Often and eagerly he glanced at the beautifully plumaged wild ducks dangling from the strong hand of his parent, then questioningly at his father's face. He well knew that the farm family on the bare South Dakota prairie would relish the fresh meat, yet his beauty-loving spirit ached at thought of the waste of the lovely feathers. Busy pioneers gave little thought to the strange yearning of a sensitive eight-year old.

Sixty five work-filled years later, modest Charles J. Kauffman realizes that the many precious things that, because of his love of Nature, he began hoarding in early boyhood, although worthless to others, were the real beginning of a collection that was to become the museum that grew up and went to college. In addition to his knack of sketching the things of Nature—often including his schoolmates and teachers—young Charles

developed an uncanny ability to carve lifelike objects with his pocket knife. A battered Nature book given him by his uncle was his most prized possession. In his later teens he learned of an art called "taxidermy." Quickly he signed up to take a correspondence course and, upon its completion, received the diploma to which he still refers with humorous pride.

The wasteful way people have with Nature was an incentive to preserve what he could. Hunters, hearing of Kauffman's hobby, often brought specimens for mounting. Being a meticulous farmer, this often necessitated a night of exacting labor. He had meanwhile prepared himself for teaching. After two terms at home, he taught several years in the State of Washington. Among his pupils was the lovely thirteen-year-old, dark-eyed girl who, three years after his return to South Dakota, became his bride. Her first shy answer had been, "But I am too young," and was disposed of with his



PHOTOGRAPH BY DWIGHT KREHBIEL

As a boy Charles Kauffman became an artist with a pocketknife, turning out such masterpieces as this one of a pioneer family, its oxen and wagon.

teasing reply, "Girls grow older in South Dakota, too." Although both teaching and farming, young Charles still pursued his hobby.

As the fabled camel crowded his master from his tent, so the young man's collection grew. It filled room after room of the small, seven-room farmhouse, gradually crowding the Kauffman family, which grew to five, into a new brick home it was eventually found necessary to build. This was a boon indeed to his patient helpmate. In cold weather, specimens had, as a matter of course, been brought into the warm kitchen to be prepared for mounting. In her gentle voice Mrs. Kauffman says: "When it happened to be a pair of *skunks*, it was a *real* test!"

When the collection became of museum proportions a small admittance fee was asked of the many people who came great distances to see the museum. Even so, it still meant that the entire family must practice much denial to acquire some coveted foreign specimen, such as the \$225 Bengal tiger still defiantly staring at one from among the thirty excellent foreign large animal specimens.

In time, even the farmhouse-museum was filled to the bursting point. Through the years Mr. Kauffman had consistently added to the natural history collection many valuable items of historical interest pertaining to

early pioneer life, and to the Sioux Indians, now on reservation at Springfield, South Dakota, sixty miles distant.

From the junior college at nearby Freeman came enticing proposals to either use the original college building or to erect a modern fireproof building on the campus to house the collection. This and other offers, including one from Bethel College, North Newton, Kansas, were seriously considered. Although both schools were of the Mennonite faith, as is Mr. Kauffman, Bethel won out. He felt the labors of his lifetime would best serve future generations not only in a larger Christian liberal-arts college but also in one centrally located.

With Mr. Kauffman continuing as curator, the museum, which he generously gave to Bethel, took up new quarters on the campus in June, 1940. It moved into a brick building known as Alumni Hall and consisting of two floors, 90 by 50 feet. The several small collections at Bethel were absorbed by the transplanted museum.

The many quaint but durable antique toys draw the attention of young children visiting the museum, while old and young are attracted by the early modes of transportation. The amazing 1900-model Black automobile, and others almost as ancient, are rounded out by a horse-drawn cutter complete with foot warmer, and one of the earliest Mennonite-owned airplanes, a Lincoln-Paige



PHOTOGRAPH BY DWIGHT KREHBIEL

A Sioux chief stands by his teepee, along with his squaw and a papoose in its cradle board.



PHOTOGRAPH BY DWIGHT KREHBIEL

A pioneer family of four, dressed in clothes of the day and surrounded by furnishings and utensils of the time, are seen in a restored prairie cabin.

with its 1914 Curtiss engine still able to fly the machine.

Although much of the historical part of the collection depicts life among the early Russian Mennonites, many parts of the world are represented. Of these the small Deknatel pipeorgan is a fair sample. Dominie Johannes Deknatel of Amsterdam, Holland, minister and author, presented one of two organs to his daughter, Hillegonda Jacoba Deknatel, at the time of her marriage to Jacob Gysbert van der Smissen. With four generations of van der Smissens the early organ went to various countries, and finally to the first Mennonite Theological Seminary in Wadsworth, Ohio. The organ suffered its greatest vicissitude upon arrival in Ohio. There a Cleveland organ builder, or his workmen, unable to fit the pipes, "amputated" several. After use by the fourth generation, it was bequeathed to Bethel College.

Twice the Chamber of Commerce in Newton has held a Booster Banquet, the proceeds of which are to be the nucleus of a fund for a new building to house this unique museum. Directives to the museum have been placed on leading highways, and tourists have swelled the growing lists of visitors. Nearby signs also invite a visit to the Eisenhower Museum at Abilene!

Of the 3000 visitors during the past year, one third were children. The many church and school groups are the curator's delight. In a scene of Kansas wildlife habitat the curator has cunningly placed a coyote chasing a jackrabbit. The fascinated children often return to make sure the coyote has not yet caught his prey, some expressing fear of the coyote's prowess. With a twinkle in his bright blue eyes, Mr. Kauffman reassures them as to the outcome: "After all, the coyote is only running for his supper, the rabbit is running for his life." So ridiculous was the conclusion of a little old lady shown the beautiful scissor-tailed flycatcher that the curator tells this one apologetically. Viewing from all sides the bird's long, gracefully forked tail, she remarked seriously: "And to think they catch the insects with that tail!"

There are 136 specimen of native mammals. Birds are Mr. Kauffman's first love and his most valuable contribution. Four hundred species of native birds are represented, with an additional 100 species, chiefly from South America. In line with religious convictions, killing in itself is abhorred by Mr. Kauffman, so he has not desired more than a pair of each species. That birds and all other animals should be displayed in natural habitat, may be taken as a matter of course by the modern museum-goer, but to learn that no staff or assistants have been employed, and not only the taxidermy but the paintings and arrangements in the diorama cases, plus all the intricate carved work have been accomplished by one man, staggers the imagination. Only a dedicated artist with unlimited zeal could achieve such results in one life span. It is all the more astounding since his work has never been subsidized.

On the South Dakota prairie homestead under ordinary siding, Mr. Kauffman discovered a pioneer log cabin. This he restored, and with sharp hatchet and pocket



knife carved the figures of a family of four. Dressed in early day apparel, they are shown in the cabin surrounded by the primitive furnishings and utensils in use in those early days. This, too, had been transported to Kansas and now stands in one corner of the lower floor of the museum. Birth and death have taken place in this old cabin. Mr. Kauffman has traced the original family and found that one child born in the cabin, now an elderly lady, lives near Wichita.

In an opposite corner stands a teepee, a carved Sioux Indian Chief with his squaw, all in proper dress, and a papoose on its cradleboard.

Cases display marine and geological collections, the latter through the offices of a son of the former registrar of the College, at present engaged at the Smithsonian Institution at Washington, D. C.

The museum is divided into three departments—natural history, history and art. Of interest to the bibliophile is the set of McGuffey's Readers and other volumes, some printed as early as 1655. Much can be learned of the natural history of the land when one becomes acquainted with the methods of agriculture then pursued, the home life and its culture. Ample opportunity is found here to visualize the lives and surroundings of the pioneer a hundred or more years ago and the problems he faced.

Mr. Kauffman says the museum is "not a mere collection and classification of lifeless material, but a place of inspiration in bringing about a greater appreciation and understanding of a wonderful creation and a wonderful Creator." He continues: "I would exchange places with no man. Though hard, my life has been a happy one and could I live it over, I would choose the same path." Among his happier memories are the two days in 1952 when the Kansas Ornithological Society convened at Bethel College for the annual spring meeting of the group.

Assuredly some day there will be a new museum with at least several wings more adequately to display this multitude of treasures, which continue to grow in volume.

No, life will never go stale for Charles Kauffman. After a thirty-year wait, he recently acquired the second and better specimen of a pair of whistling swans through the courtesy of the Federal Fish and Wildlife Service. Leading you to the display case, his sensitive face aglow with satisfaction, he says, "Isn't that bird perfect? It was worth the long wait."

The story of the Kauffman Museum is the picture of a man's life, and that is why it is often called "The museum with a soul."



PHOTOGRAPH BY RAYMOND E. HARNLY

Eddie Kauffman hugs his knees, looking at his curator grandfather as he describes one group.



PHOTOGRAPH BY RAYMOND E. HARNLY

The exotic-looking scissor-tailed flycatcher draws the rapt attention of four young bird lovers as Charles Kauffman tells them about this bird.



Catholic science teachers attended a Nature workshop in the Cook County Forest Preserve, with field trips and classroom work from early morning until late at night. Brother Charles, ecologist from St. Mary's College, Winona, Minnesota, gives some instruction.

*The bottleneck in conservation education is*

## Teacher Training

Says ROBERTS MANN

*Conservation Editor, Forest Preserve District of Cook County, Illinois*

**P**EEERING over his glasses, Dr. E. Laurence Palmer put his finger on the crux of the problem in conservation education when he said: "It is easy enough to say to a teacher, 'Teach conservation', or 'Teach patriotism', but it is another thing for the teacher to instill into her pupils the spirit back of those words."

Most of us who have been wrestling with this problem agree that conservation education must start at the grass roots and stem from outdoor education. Outdoor education enables people to live intelligently and find enjoyment in the outdoors. It teaches them to appreciate Nature, Nature's laws and, if properly taught, to recognize their utter dependence upon the land. It seeks to develop a conviction of personal responsibility for the wise use of our natural resources. The basic component is Nature appreciation, which is best engendered by emotional experiences in the outdoors and Nature lore acquired firsthand.

It is always the person who sees, discovers, and explores a situation who gets the most out of it. In the outdoors, children satisfy their bumps of curiosity by eagerly employing their five senses—they see, hear, smell, taste and touch. Such learning is faster, better integrated, more deeply appreciated, and seldom forgotten. The problem is how to get them outdoors.

The obstacles are formidable in any metropolitan region but, having a priceless asset in the Chicago area, we are demonstrating that it can be done.

The Forest Preserve District of Cook County now totals about 41,000 acres—80 percent wild native landscape of which 60 percent is forested, and with plenty of inland lakes, ponds, sloughs and placid streams. It harbors a diverse and abundant wildlife population phenomenal in a county of five million people. These holdings are preserved, "as nearly as may be, in their natural state and condition for the education, pleasure and recreation of the public." Consonant with the priority given "education" in the enabling statute, our conservation department was created for that purpose. Its primary objective has been to stimulate such a demand for outdoor education that the Preserve will be utilized eventually by all public and parochial schools; that field trips for Nature study and Nature appreciation will become an integral part of the curricula in elementary grades, for biology classes in secondary schools, and for pupils studying units in conservation.

There are practical problems such as transportation, liability insurance, parental approval, and rearrangement of classroom schedules, but the baffling problem is the teacher who must conduct such excursions, utilize them,

and translate them into knowledge. Some teachers, by temperament or for physical reasons, have no liking for rambles through woods and fields, or along the muddy shores of streams and marshes. Many have had limited outdoor experience, little or no training in natural history, and are reluctant to attempt field trips with their classes. They are ashamed to say, "I don't know," and seem unaware of the educational value in saying, "Let's look it up when we get back to school."

To aid such teachers, in each climatic region of the United States, there is real need for a manual to help them plan, conduct and utilize field trips. That, plus "Doc" Palmer's *Field Book of Natural History*, would give them more confidence. There is greater need for teacher training in natural science and the techniques of teaching it. This can be accomplished in workshops and summer schools, but lack of it, and lack of it in the teacher training institutions, has created a bottleneck in outdoor education and its end product—conservation education.

Although properly providing fun and adventure, a well-conducted school camp—or even a one-day field trip—is more than a mere outing: it is a classroom outdoors. It bridges that gap between the textbook and things as they exist. Pupils and their teachers solve, together, problems they would never see as clearly in any other setting. They learn by doing and enjoy it.



Student teachers from Lutheran Concordia College study rare plants in the only rock canyon in Cook County, Illinois.

Administrators in nineteen States have found that school camping has as much value in training teachers as it has in providing learning experiences for the children.

Unfortunately, school camping is not feasible for more than a tiny fraction of the schools in this or any metropolitan area. There are more than 700,000 pupils

Firsthand knowledge of Nature is a priceless asset to a teacher as these participants in a Nature and conservation workshop are discovering.







Dressed for rain, these student-teachers collect and study aquatic life in a downpour.

enrolled in more than a thousand public and parochial schools of Chicago and the 104 suburban towns in Cook County. There can never be enough facilities for school camping in this area, even if there were enough teachers capable of staffing them, and enough resource people, such as our forest preserve naturalists. Nevertheless, we promoted school camps for their demonstrational values, and several are conducted each year in our three large group-camping centers. From their impact on the schools so experimenting, we have been able to show other school districts what can be accomplished by field trips, Nature trails and classroom projects, even though they may engage in school camping. We can guarantee, as by-products, better discipline, better morale, and higher overall scholastic levels.

Further—and this has been the payoff in every case—school camping has created demand from the teachers for training in outdoor education. Several school districts now conduct annual workshops for all their teachers at Camp Sagawau, which is used exclusively for educational programs, or one of our other camping centers. We stay in the background as much as possible. Roland Eisenbeis, our superintendent of conservation, wisely insists that such programs remain in the hands of the educators, where they properly belong; that our function is to supply the facilities and resource people requested.

In the mornings of a typical two-day workshop, our naturalists conduct field trips for three groups of teachers who teach 7th and 8th grades, or intermediate grades, or primary and kindergarten. Emphasis is on the life histories and ecology of plants and animals, rather than on mere identification; upon techniques of conducting field trips; upon collection and use of teaching materials; and upon the potentials of "schoolyard and vacant lot biology." The afternoons are usually devoted to group meetings, culminating in a general session discussing what was learned and how to use it and question-asking.

It is equally important, in our opinion, that these workshops be enjoyable; that the food be abundant and good; that, on the evening of the first day, there be an "orientation session" (usually attended by the school board and administrative staff) followed by a social gathering with snacks and square dancing. The participants "let their hair down" and have fun in a "non-academic environment." Next morning they seem like different people, full of conversation and laughter but also full of questions and purpose. These school camps, workshops and "institutes" were observed by educators in the public and parochial school systems of Chicago, Cook County and Illinois. What happened?

In 1955 the Cook County superintendent of schools appointed an Outdoor Education Committee. In May, at Camp Sagawau, it sponsored a three-day workshop attended by 26 suburban teachers. They ate like queens and kings but worked like beavers, and received credits from their respective school boards. The cost per teacher was \$15 for meals, paid by the school districts. In addition to broader and more advanced instruction than that outlined above for the two-day workshops, teachers learned how to utilize our new Nature center—"the Little Red Schoolhouse" perched on the brow of a slope overlooking Longjohn Slough, and the self-guiding Nature trails. A similar workshop for other Cook County teachers was held in October, and will be a semiannual activity.

The general superintendent of the Chicago public schools has appointed a similar committee. Its immediate agenda includes two objectives. One is the use of The Little Red Schoolhouse by teachers and their classes using buses. The other is the establishment of workshops for teachers now teaching, to provide training in natural history, Nature appreciation, the fundamentals of conservation, and the corollary classroom techniques.

Last June, in cooperation with (*continued on page 107*)

*Use garden trowel  
and artist's gouge  
to discover that*



By FLORENCE K.  
TOMLINSON

*Illustrations by the author*

## Block Prints Are Fun

ONE DOES NOT have to go the breadth of the land or to foreign shores for pleasure or art stimuli. The joy found right at home in a small rock garden or more spacious vegetable patch can be extended into the long winter months through study of the plant, insect and animal life of your garden. The life about you will develop added significance if you try to interpret some of its beauty and character in the form of motifs and designs on block prints. Most of the block prints on these pages were taken from a small rock garden. The very act of cutting in the block will familiarize you with true creative experience. The beauty and craftsmanship of velvety block prints will take on new meaning, too, for by continued effort you will absorb and learn to appreciate their fine art qualities, and their possibilities.

There is much thrill and excitement associated with pulling your first proofs. Friends will carry home their bridge scores if they are decorated with a motif from your garden. You can make book-plates for every member of your family, using their favorite flower and



their initial or nickname. At the proper time you can work out your personalized Christmas cards. Some summer sunshine can be carried over into winter months in just that way. In this troubled world we find it necessary to release our emotional energies, so, after dropping your trowel, turn to your artist's gouge and carry over some garden inspiration and feeling into your block.

The professional artist knows that the perception of esthetic values is a thing that grows. It becomes part of us, later to be used intuitively. Some are innately conscious of the beauty and design around them. Others need be awakened through the observance and experience of the art qualities. The material at hand is so great that one never ceases to grow who keeps an open mind. Nature is still a great teacher.

Linoleum-cuts are the simplest form of all prints, and the best to try first. Battleship linoleum is the easiest in which to carve your design, but ordinary kitchen linoleum that has a smooth surface is quite satisfactory. It may be mounted on a piece of wood to flatten



and strengthen the back, or it may be used just as it is. Perhaps you have some odd pieces tucked away somewhere.

Some people have made tools from sharpened umbrella ribs, inserted in wooden handles, but a simple gouge, or a set of tools with which to gouge out the various shapes, can be purchased for as little as twenty-five or fifty cents. Printer's ink in small tubes is inexpensive and can be obtained in black or your choice of beautiful colors. A piece of glass or smooth tile on which to press out the ink, and a brayer roller or dabber for spreading this ink flat and transferring the ink to the block, will of course, be necessary. Rice or Goya paper is the best to print on, but also expensive. Newspaper stock, bond paper and ordinary school drawing paper all work well and are inexpensive. Try tissue and oatmeal papers. After experiments, which are part of the fun, you will discover which papers make the best prints. Different tints of colored papers may be used. A color that is in keeping with the theme of the design often adds to its character.

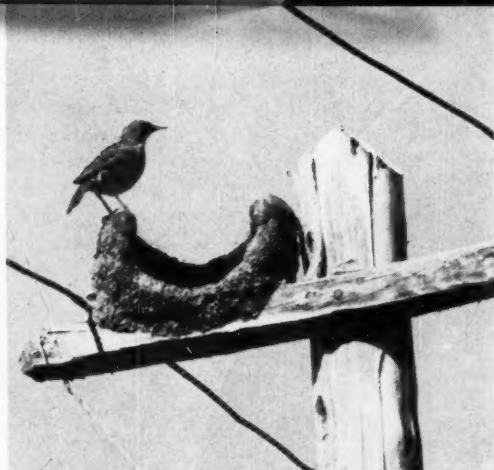
Printing or taking impressions from your block, is, in itself, exciting. An old letter press is excellent for printing, but, for lack of a press, there are many other fine methods. If your paper is fairly thin, you can print much the same way wood blocks are printed. Put a little ink on your glass or a piece of smooth tile, roll it till flat with your brayer or a home-made dabber. The idea is to get it flat, then roll or dab the face of the block until all of the parts of your design are evenly inked. You are then ready to place the paper on the block, rub over the back with a smooth-surfaced instrument, such as the bowl of an ordinary tablespoon. Usually thin paper sticks to the inked block and you need only be careful that it does not slip. If the paper is slightly transparent, you can tell when you have rubbed enough. Then remove the paper slowly and look at your result. Perhaps it will take several pulls before you will get a satisfactory impression of your design.

Another method for unmounted linoleum is to lay the inked linoleum, with the paper upon it, inside an old newspaper and then run the whole through an ordinary soft-rubber clothes wringer. Small mounted pieces can be pounded on the back with a hammer to get a print. Standing on the block is another way. In either of these last two ways, put a few newspapers, or a flat rubber kneeling pad, under the block for it is the suction caused by the release of pressure that pulls the ink from the linoleum to the print.

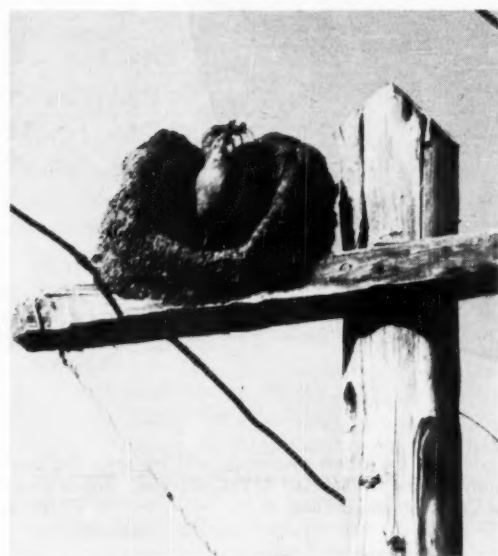
Work directly on the block that you may think of as a unit of dark space because most printing is done in black or dark ink on white or tinted paper. All parts of your block gouged out become lights and so designate patterns or forms. Be careful not to let your tool slip. Scratches, if deep enough, will also show in the print when taken later. A drawing or a few pencil or chalk marks on the block are permissible in this game to guide or give you confidence. If you are going to cut any letters on the block, it is necessary to reverse them as the whole print is reversed when taken off the block. This is easily done by writing on a card whatever you happen to wish on the block and holding it up to a mirror, then copying what you see in the mirror. Another way is to hold up to the light a piece of thin paper on which you have the letters so you see them in reverse. You might wish to sign your initials on the block.

Try to visualize your subject upon the block to break that space most pleasantly and effectively. After all, the most important thing is a good design and direct expression. If you make a contour drawing, that is a light line around your object in mind, you will have a motif in line only. In that case the line should be full of feeling, varying with richness and depth to lightness and delicacy. Should you think or feel in terms of masses or spaciousness, you will be bold and gouge out wide areas to represent backgrounds and forms. Plan to divide the spaces interestingly by your dark and light areas, placing darks against lights (*continued on page 106*)





The red ovenbird, or baker bird, selects a site on a telephone pole crossbar and starts construction of its adobe nest, which sometimes has as many as seven rooms.



The nest grows and the bird brings a bill full of mud mixed with roots, twigs, or horsehair. Below, a pair of horneros perch near their completed home. If a rain washes some of it away they will quickly repair it.



# HORNERO, Builder of Ovens

By HAZEL MOHLER

*Photographs by Ricardo Quincke*

**I**N THE River Plate regions of South America, stretching over the pampas, the hornero builds its nest of adobe, in the shape of an oven and about the size of a human head. These miniature huts perch on fence posts, poles, roofs of barns and houses, or in trees near dwellings. Instead of hiding its nest, this bird prefers to build close to the habitations of people.

In Spanish *hornero* means builder of ovens. It is also known as the baker bird and red ovenbird, and to science as *Furnarius rufus*. It is one of several species of ovenbirds of South and Central America. The hornero is reddish-brown and a trifle smaller than a pigeon. It is sometimes called the architect of birds. Although the nest generally consists of two or three rooms, the birds have been known to build a "skyscraper" of adobe, as many as seven rooms piled one on top of the other.

Inside, the hornero's nest has a central partition, a continuation of the external wall. Behind the partition is a well-protected bedroom. Generally the entrance is on the right side, but occasionally a "left-hander" is found. The hut is built of mud mixed with twigs and roots, male and female working all winter during the rainy season. After each storm, if rain has washed away part of the wall, the couple industriously gather more mud in their strong, slightly curved beaks, to patch. By spring the hut is so strong it can withstand storms for several years. The twigs, roots, and horse-hair entwined in the mud help to prevent the adobe from cracking during the severe heat of summer.

About a foot in diameter, the finished nest may weigh up to nine pounds, and gives the birds good protection from heat, rain, and wind. Normally, the horneros build the entrance to the nest on the side opposite from the prevailing wind, the *pampero* which comes from the southwest.

The hornero is the national bird of Uruguay, where children are taught to respect it and treat it as a friend. On the lonely pampas the birds are often the only playmates of children, and become known by nicknames as they are fed in the courtyard, or near the kitchen door. Often these children will be living in an adobe hut quite similar in construction to that of the smaller hut of the ovenbird.

The song of the hornero, although not melodious, is referred to as the "hornero's laughter." It is a shrill chirp, strongest before a rain shower, when the bird flutters around the yard, warning (*continued on page 103*)

# Nature IN THE SKY


By SIMONE DARO  
GOSSNER



9 P.M., Feb. 1  
8 P.M., Feb. 15  
7 P.M., Feb. 29

★ 1<sup>ST</sup> MAGNITUDE  
● 2<sup>ND</sup> " " "  
● 3<sup>RD</sup> " " "  
● 4<sup>TH</sup> " " "  
● 5<sup>TH</sup> " " "

To use this map hold it before you in a vertical position and turn it until the direction of the compass that you wish to face is at the bottom. Then, below the center of the

map, which is the point overhead, will be seen the constellations visible in that part of the heavens. Times given are for Local Standard Time. 

## Caroline Herschel

**I**F THERE ever was, in the shadow of a great man, a silent helper, devoted companion, one without whose comfort a genius may not have given his full measure, Caroline Herschel was such a person. The important contributions of Sir William Herschel are familiar to all students of astronomy. His discovery of Uranus, the improvements he brought to the telescope, and his observations of nebulae are quoted in the most elementary textbooks. Little mention, if any, is ever made of his sister Caroline, in spite of her life-long assistance and dedication to her brother's work. But this is as she had wanted it. Never seeking recognition for herself, resenting it even when it came, she sought only to help her brother in his research by relieving him of routine tasks.

Caroline Lucretia Herschel was born in Hanover,

Germany, on March 16, 1750, the eighth of ten children, of whom four died in early childhood. Her brother William was twelve years her senior. Their father, Isaac, was an accomplished violinist and an oboe-player in the band of Guards. He encouraged his sons to develop their innate talents, and all embarked on musical careers. Caroline's education, on the other hand, bore the imprint of a civilization that did not consider it proper to instruct a girl in anything else besides correct housekeeping. As a special concession to her father's unconventional desire to give her a "liberal" education, her illiterate mother allowed her to attend the garrison school with one of her brothers, and she was thus taught to read and write.

Life in Hanover was difficult in those days. The country was impoverished by the rigors of war. It had,

indeed, little to offer to budding young artists. When Caroline was seven, her brother William, who was already her favorite, went to England to seek his fortune as a musician. His extraordinary proficiency won him quick recognition, and, ten years later, he accepted the post of organist at Bath. One of his functions was to organize public concerts. When, in 1772, he found himself in need of a soprano, he wrote to his family in Hanover suggesting that his sister Caroline come to Bath to be instructed in the art of singing. Her only hesitation was caused by concern for her mother, who would be deprived of her help, but she loved her brother dearly and soon accepted with enthusiasm.

Caroline left Hanover on August 16, 1772, and, after an exhausting journey, took up residence in her brother's house at Bath. For the next ten years she kept house for him, transcribed his compositions, rehearsed his choir, and performed at concerts as his soloist. She actually turned out to have a lovely voice and could have made a handsome career as a singer, except that she steadfastly refused to perform for any conductor other than her brother.

It was shortly after her arrival at Bath that William Herschel's mind began to turn to practical astronomy. Even as a boy he had always been a brilliant student of mathematics, and now it seemed that music no longer fulfilled his intellectual need. Always eager to impart his knowledge to others, he gradually began to teach his sister the rudiments of algebra, geometry, and trigonometry. His own ambition was to build a telescope of large aperture that could reach farther into space than had ever been done before.

Each room in the house was turned into a workshop, to Caroline's dismay. In the *Memoirs*, written in her later years, she recalls how they used to spend all their leisure hours polishing lenses, casting mirrors, and turning eyepieces. On occasion, she did not even take time for changing the dress she had worn at a concert, and, in her own words, "many a lace ruffle was torn and bespattered by molten pitch."

The Herschels gave their last public concert on Whit Sunday in 1782. After this, William decided to devote all his time to astronomy, and accepted the position of Astronomer Royal at the modest salary of two hundred pounds a year. He found it quite natural that Caroline, besides remaining his housekeeper, should now become his scientific assistant as she had helped him with his music in the past.

On August 1, 1782, they moved to Datchet, near

Windsor, where they had found a suitable site to erect a twenty-foot telescope. Caroline was given a small telescope—she called it her "sweeper"—and was shown how to search for comets. She truly enjoyed her little sweeper, but most of the time she laid it aside to help her brother with his own observations. It was she who kept his records, even when the temperature was so low that the ink froze in the bottle. She also tells of the time when William worked at his telescope for

sixteen consecutive hours, while now and then she would pop food into his mouth to keep him from starving, and read stories aloud to keep him awake.

Shortly after their installation at Datchet, William began the construction of a new and bigger telescope of his own design, forty feet in length and forty-eight inches in diameter. It soon became apparent that the old Datchet garden was too small to accommodate the new instrument. In April, 1786, the Herschels moved to the neighboring community of Slough (pronounced as in *plough*), where it seemed that they could at last settle down.

A year later, the King of England, who had taken increasing interest in their work, appointed Caroline as the official

assistant of her brother and granted her a small salary of fifty pounds a year. This was the first money that she had ever earned. All her life she had been almost obsessed by the desire to have some measure of financial independence. Her early attempts to earn money as a seamstress in Hanover were sharply discouraged by her family, as it was not considered ladylike. When she came to England, she was too busy helping her brother to do anything for herself, and it was thus with the greatest relief that she accepted the King's grant.

The following year an event in William's life disrupted her own to an extent that can only be surmised. On May 8, 1788, at the age of fifty, William Herschel married Mary Baldwin Pitt, a wealthy widow. Caroline could no longer be the housekeeper, even though she remained the assistant and the secretary. It affected her strongly and painfully. Deprived of the intimate association she had known for sixteen years, she turned to her telescope with a vengeance. Sweeping the skies relentlessly, she discovered no less than eight comets in a span of ten years.

When her brother died in 1822, she could not bear to remain in England, and returned to Hanover after an absence of fifty years. The remaining years of her life were spent cultivating the memory (*continued on page 106*)



Caroline Herschel, 1750-1848



# Nature IN THE SCHOOL

By E. LAURENCE PALMER

Professor Emeritus of Nature and Science Education, Cornell University,  
and Director of Nature Education, The American Nature Association

## Quo Vadis?

ON A RECENT FIELD TRIP of the Geological Society of America, a mid-West

geologist told me a story that provides a thought for the school page this month. He had made inquiries about the progress of his youngster in elementary school arithmetic. The child's teacher replied, with little apparent regret, that the girl was not doing so well in mathematics, but added, with great pride, that the youngster had made social adjustment and her record was excellent in watering flowers. Such an incident seems to inspire the question: "Whither goest thou?"

According to the legend, "when the apostle Peter fled from Rome to escape martyrdom he met Christ upon the Appian way and asked him this question; the reply, 'To Rome to be crucified again,' turned Peter back to his duty." There are many reasons why many teachers should be asked today whither they go. It is certain that the answers would vary. Some might decide that, whatever the attractions, it might be better not to go back "to Rome" at all. Some might decide to go there for a Roman holiday. Some I am sure would recognize their professional obligations and be perfectly willing to be "crucified" a little so long as they were doing what their profession requires. In the elementary school system their duty certainly includes a mastery of the rudiments of arithmetic, writing, spelling and reading. Watering flowers may have its place in the general scheme of things, but the ability to add, subtract, multiply and divide is likely to be of much more value to the average citizen. To him education should mean learning to enjoy doing what must be done when and where it must be done.

Further stimulation for this page has been aroused by a television program, more than an hour long, designed to build up interest in the

White House Conference on Education. Important in the argument for bigger schools seemed to be the idea that such schools would permit youngsters to engage in huge mass rallies. A sample was shown on the air, and, under the direction of cheer leaders, alternate rows of youngsters swayed in opposite directions and yelled that they wanted new schools. Further evidence that these schools were to be desired was presented by rank after rank of attractive drum majorettes marching at night down city streets to the blare of bands and trumpets. The dollars and cents value of the schools was presented by one who purported to be a contractor, but who murdered the King's English and who obviously had a vested interest in the construction of a building, even though he did not know how to construct a sentence. When the votes were counted it was obvious that the wishes of the smaller communities were drowned out by sheer force of numbers from the larger communities, where the schools were to be built.

## What benefits?

I did not see the whole program but I saw no suggestion that better teaching would result from the proposed change, although we hope that this would be the case. What discouraged me was that night street parades and cheering masses of youngsters were offered to us as evidence of an improved school system. I just do not get that. I know that it is a bad habit in arithmetic to count on your fingers, but I would definitely have preferred to see one little girl count on her fingers to help herself in arithmetic than to have seen hundreds of big girls counting on their legs in a parade to win votes. This does not mean that drum majorettes have no appeal to me, but they do not, in my book, represent the best foot a school can put forward to get public support. They, and those who water the flowers successfully, may well be

just the frosting on the cake, sweet and pretty but just a bit expensive.

As this is written the Russians have just announced the detonation of an H-bomb. The radio announcers are wrangling over whether the announcement said that the Russian bomb packed a punch of a million tons of TNT or more than 18 million tons. The assumption is that since we have exploded bombs more powerful than 18 million tons we have little to worry about if the Russians can do no better than a million. Just how dumb can we be? Think of the damage that is done every year by 22 rifles and BB guns, or, for that matter, by fists alone. This week, in my home State, a horse was shot for a deer by a hunter. A man was riding the horse when the animal was shot. I understand that the hunter got off with a fine of \$25.

## Not size alone

It is not the size of the weapon that is always important but the behavior of the user of the weapon. Look what Messrs. Hitler and Mussolini did with the powerful toys their fellow citizens gave them. We need the powerful toys for use in peace, or possibly even in war, but we do really need a little of the peaceful cooperative behavior that might stem from the habit of watering flowers for the whole class. We cannot, however, accept the flower-watering as a substitute for arithmetic, or for grammar and other disciplines that should certainly be established in the elementary schools. In view of some of the educational philosophy that has been followed in some places it may call for some courage for some teachers to face the issue, even at the risk of being crucified for it.

We are told that we have every reason to believe that the Russians are now, or will soon be, turning out more and better engineers and scientists than are we. Certainly this may well be so if we accept watering the flowers as a substitute for or the equal to arithmetic. We are told that in the past five years the number of graduating engineers in the United States has dropped from 53,000 to 25,000 a year; that in 35 years, the percentage of high schools offering the necessary algebra for work in engineering has dropped from 56% to 24%, for geometry from 27% to 11%, and that only 2% of our high

school students now study trigonometry, which is fundamental to success in engineering and the exact sciences. *Quo vadis?*

The little girl who had such ability at watering the flowers comes from a State where schools are given about the best support to be found anywhere. At her State university, a few years ago, they offered a course for the training of teachers of science at the elementary level. The announcement of the course states that for those taking the course "no science background is assumed and no attempt is made to cover content." Again, *quo vadis?* I am sure that anyone bucking those who defend this philosophy will be crucified. I have tried it. I am reasonably sure that it will be surprising, in view of the crisis in the science teaching field if some of those who defend the philosophy of many of the science educators do not come forward with the idea that all that is needed is more money for science teachers. I do not believe that that is the case. I think that we need more money, of course, but unless it is accompanied by a change of philosophy it will get us nowhere except deeper in the hole in which we now find ourselves.

## Hornero

(continued from page 99)

everyone of the approaching storm.

The horneros apparently pair for life. Each spring the mother deposits her eggs in an inner room that has been lined with feathers and soft grasses. Here the usually five white eggs hatch and the young birds remain for some time in the shelter of the protected bedroom.

This species appear to have been indigenous to the River Plate regions of Uruguay, central Argentina, and southern Brazil. However, as if keeping pace with the shifting progress of civilization, it has extended its range by moving along telephone lines and posts.

## Ohio Publications

Dramatically presented and packed with practical suggestion are the two companion publications of the Ohio Forestry Association, Southern Hotel, Columbus 15, Ohio. "Valleys of Opportunity" is the title of one of these publications and it presents a watershed conservation plan for Ohio. It covers an analysis of Ohio's watersheds and, in 64 pages of pictographs, maps, charts and

tables, presents concise facts on soil, water, forestry and land management. A companion 32-page booklet is entitled "How to Develop Watersheds" and is a guide to civic, business, industrial, agricultural and conservation leaders interested in promoting private and public effort in local watersheds. The work was done under the direction of S. L. Frost, Director of Watershed Development of the Association. Although concerned with Ohio, the basic approach is of widespread application. "Valleys of Opportunity" sells for \$3.00.

## S.A.F. Elects

DeWitt Nelson of Sacramento, California, director of the California Department of Natural Resources, has been elected president of the Society of American Foresters for 1956-1957. George A. Garratt of New Haven, Connecticut, dean of Yale University School of Forestry, was named vice-president.

## Nature Interpretation

Of special interest to those concerned with Nature interpretation in national, state and local parks is the Second Annual Workshop on Interpretive Programs to be held April 2 to 4 at Bradford Woods, Indiana. The 1955 Workshop brought together more than sixty leaders in outdoor education, and the 1956 session bids well to exceed that record. Full details are available from Reynold E. Carlson, Alpha Hall, Indiana University, Bloomington, Indiana.

## Newcomer

The Connecticut Wildlife Conservation Bulletin, with its Volume One, Number One issue appearing for September-October, 1955, is the latest addition to the list of State conservation department periodicals. Its motto is "Live with the Land." Subscription is fifty cents a year for six issues annually. The publication is issued under the direction of Lyle M. Thorpe, Director, Connecticut State Board of Fisheries and Game, State Office Building, Hartford, Conn.

## New F. & W. Assistants

Two State wildlife officials have been named as Assistant Directors of the United States Fish and Wildlife Service. From Massachusetts comes Robert H. Johnson, the Bay State's Director of the Division of Fish and Game, and from Wyoming, Lester Bagley, Wyoming State Game and Fish Commissioner.

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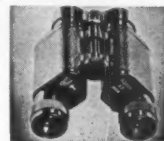


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# THE Nature CAMERA

By EDNA HOFFMAN EVANS

## Photograph Exhibits

THE ANNOUNCEMENTS of a good many photography exhibitions and contests come to my desk each year. They come from all parts of this country and from other sections of the globe, as well. Some arrive too late to be of any value to readers of this section. Others are from too far afield, or of such a definitely regional nature that I assume people interested will already know about

them. Besides, there is just not space available to use them all.

There are two, however, that I mention, year after year. One is the Chicago International Exhibition of Nature Photography, in progress, Feb. 1 through Feb. 26, at the Chicago Natural History Museum under the sponsorship of the Chicago Nature Camera Club. The other is the annual National High School Photographic Awards sponsored by the Eastman Kodak

Company.

The International Exhibition, so I believe, attracts the work of outstanding and interested Nature cameramen from many parts of the world. It is definitely a gathering of the work of experts. The slides and prints on exhibit were prepared by cameramen who have had wide experience and active interest in the field over a fairly long period of time. In other words, they are adults.

The Awards, on the other hand, is a contest open exclusively to high school students—to all boys and girls in daily attendance at any public, parochial, or private high school (grades nine through twelve) in the United States and its territorial possessions. The contest for 1956, which is the eleventh of its kind, opened on January 1 of this year and

Four prize-winning photographs in the 1955 Eastman National High School Photographic Awards.



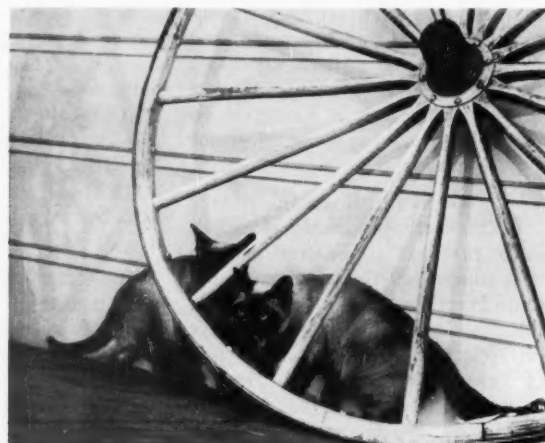
"The Sentinel" by Robert Ludlum.



"Study in Black and White" by Stephen Feldman.



"Vain Parakeet" by Joe Berger.



Siamese cats photographed by Mike Vogel.



will close at midnight on March 31. Winners will be announced in May.

High school students who wish to enter the contest may submit as many pictures as they wish. The sole requirement is that the contestant have taken the photograph himself since April 1, 1955. There are no specifications as to camera, film, or techniques. Further, while the entrant must take the picture, the film may be developed and the picture printed by a commercial source.

#### Prizes of \$5000

Again this year the Eastman Company offers more than 250 prizes, totaling \$5000 in cash. Judging will be done in four classes: first, school activities, including athletics; second, people, all ages but no school pictures; third, pictorials; and fourth, animals and pets. The top award in each class will be \$300 in cash, with second and third selections receiving \$200 and \$100 respectively. Four special awards of \$50 each will also be given, and in addition there will be 240 honorable mention awards of \$10 each.

Young people interested in entering the contest should write for additional details to the National High School Photographic Awards, 343 State Street, Rochester 4, New York. In addition to entry forms, Eastman has two other aids for prospective entrants. One of these is a six-page bulletin of "Helpful Hints for Entrants," containing suggestions for subject matter, information on what the judges look for in entries, and many ideas for making and submitting pictures that will gain attention. The other aid is the booklet of Award winners from the previous (1955) contest; this shows sixteen of the top prize winning pictures and gives some indication of the types of subjects and treatments that will catch the judges' eyes.

Many *Nature Camera* readers, I suspect, are young people of high school age. Some are even younger; others are much older. The letters I get from readers show a wide age range, as well as a considerable variation in photographic equipment and experience. I hope some of my young readers will enter photographs in this contest, and I sincerely hope they will be among the winners.

Young people—teen-agers—have come in for a great deal of adverse criticism lately. Not that the

"younger generation" of any period has been free of criticism from its elders—but all too often nowadays the newspapers, magazines, movies, radio, and television all join to make us aware of the flock of juvenile delinquents growing up in our midst. No doubt many of the reports are true; no doubt many others of them are overdrawn. There are unhealthy aspects to the activities of today's young people, but that does not mean that all or even a large percentage of them are delinquents. For nearly a score of years I have worked closely with young people passing through that difficult transition from childhood to adulthood. I have seen them go off to two wars, and I have seen most of them come back. I have seen misfits, but I have seen the majority settle down to jobs and families—with as many successes and failures as one might expect from a similar block of population from any generation in history. In other words, critics and croakers to the contrary, I still have faith in the young people of America.

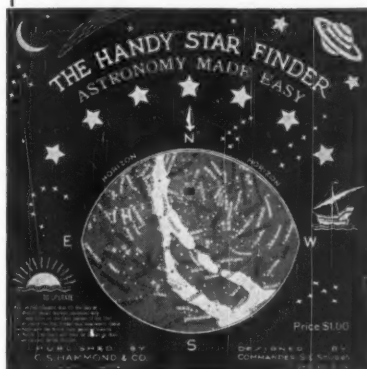
#### Value of a hobby

The kids I feel sorriest for—and those who seem most prone to get into trouble—are those who have to be amused. They have no hobbies, no interests; in all things they are spectators, not participants. But the kid with a hobby, the boy or girl who has a major interest to occupy the mind and to share with others, that youngster is on the road to becoming a useful, adjusted citizen.

Photography is a wonderful hobby. It opens up new vistas all down the line. I do not believe that anyone can ever know everything there is to be known about photography, so it is a hobby that need never grow stale just because there is nothing new to be mastered. The fellow with a camera is in demand, too,—perhaps not the same way as the chap who can play the piano—but people want to look at pictures just as they like to listen to music. Besides that, skill in photography opens up opportunities on the school paper and the yearbook, and leads to active participation in school affairs. True, photography is expensive, there is no getting around that. However, the enterprising young businessman can make his expenses or even more, if he keeps after his orders and makes his collections promptly.

Boys, it seems, are more apt to get

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interested in photography than girls are. I suppose there are good reasons for this. Women, however, are often as ardent camera fans as men. Looking over the list of winners in last year's Awards, I note that the top four winners were all boys. One girl, however, showed up as winner in the second class awards, and another girl received one of the special awards. On the other hand, the models in three of the four top winners were feminine.

It is interesting to notice, also, the places from which the winning pictures came. They are not big cities, any of them, and several of them are quite small. Nor were they concentrated in any section of the country. The four grand winners came from Mesa, Arizona; Neillsville, Wisconsin; Mt. Vernon, Washington; and Santa Barbara, California.

And what sort of pictures won prizes? Notice, in the representative winners pictured here, that simplicity is one of the keynotes. The pictures are not cluttered with excessive detail; there is one center of interest that dominates and at the same time blends harmoniously with the whole scene.

Winner of the grand award in class four (animals and pets, including wildlife) was a striking photograph of a cormorant "framed" by driftwood in a scene photographed on a Pacific coast beach. The photographer was Robert Ludlum, 17, a junior at Santa Barbara (California) High School. He had been taking photographs for about eight years before making this winning picture. According to the Eastman announcement "this picture so perfectly centers interest on its principal subject—and has caught the bird in such a natural pose—that the judges were amazed at its competence and quality, and decided that it must have taken young Ludlum a considerable length of time to get a picture of this type, combining a high degree of technical and artistic ability." The photographer titled his picture "The Sentinel."

Second award in the animals and pets division went to a picture of two horses looking out from windows in a stable. Title of the picture was "Study in Black and White" and the photographer was Stephen Feldman of Rhodes School in New York City. Third award in the animals class went to Mike Vogel of Burbank High School, Burbank,

California. The picture was not titled but showed two Siamese cats peering through the spokes of an old wagon wheel. The contrasting lines here—horizontal, vertical, and diagonal, plus the curve of the wheel—make an unusually striking composition, while the cats serve as a definite focal point of interest.

Also of interest to Nature photographers was one of the special award winners, taken by Joe Berger, a student at the Mining and Mechanical Institute in Freeland, Pennsylvania. Titled "Vain Parakeet," the picture is exceedingly simple in design, yet highly effective from an artistic standpoint. And any photographer who has ever tried to corral one of the elusive little birds, which are so popular now as pets, can appreciate the patience and skill that went into getting such a picture.

So I am highly in favor of Eastman's annual contest for young photographers. I concur wholeheartedly with its purposes. 🐣🐣🐣

## Herschel

(continued from page 101)

of William Herschel and of his great discoveries, and encouraging her nephew John in the completion of his father's investigations.

In 1828 she was awarded the Gold Medal of the Royal Astronomical Society, which also made her an honorary member in 1835. Three years later, she became an honorary member of the Royal Irish Academy. On hearing of this distinction, she exclaimed: "What is THAT for?" Although pleased by these outward signs of recognition, she always felt that they detracted from the fame that was rightfully her brother's.

She died peacefully on January 9, 1848, two months before her 98th birthday.

In the month of February, the New Moon will occur on February 11, and the Moon will be full on February 26.

Mercury will be found in the morning sky throughout the month, reaching its greatest western elongation on February 21. It will rise about an hour and a quarter before the sun on February 15 and will be low in the southeastern sky by sunrise. Its magnitude will be 0.4 on that date.

Venus, in Pisces, will be a bright

evening star during the whole month. It will set three and a quarter hours after the sun and will be visible right after dark in the western sky as a brilliant object of magnitude -3.6.

Mars, in Ophiuchus, is becoming gradually more favorable for observation. It will rise in the southeast four hours before the sun and will be low in the southern sky by dawn. It will be found approximately fifteen degrees to the east of Antares. On February 6, Mars will be in conjunction with the moon, passing very close to the northern edge of the lunar disc.

Jupiter will be found in Leo to the west of Regulus. It will rise at the time of sunset on February 15. Rising in the east, it will pass nearly overhead by midnight and will be visible all night, setting near sunrise.

Saturn, in Scorpio, will be a few degrees northwest of Antares and about twenty degrees to the west of Mars. It will rise nearly five and a half hours before the sun and will be almost due south at dawn. 🐣🐣🐣

## Block Prints

(continued from page 98)

and lights against darks to bring them out with more strength. Some areas may be treated as grays or half-tones by developing techniques from a variety of strokes that suggest the textures of the subject. Think before making your stroke so that it is direct and not an idle hack.

Keep your work simple, for remember the simpler the means the more emphatic the effect. Therefore, omit all but the essentials. Remember, too, that fear is a great destroyer; if your first print does not satisfy you, try again. I have seen beginners exclaim "see, see," holding up their print for all to see, their eyes dancing with delight. If your first print does not satisfy you, having gained experience your next might be just what you wanted. We learn best through experience and working directly on the block affords that pleasure. The individual approach of a person means a great deal, and yours to someone else may be quite fascinating. It is not the subject matter that counts so much as how you treat it. Strive for good design and soon your observation will increase. Then you will look for balance, movement, rhythm and harmony in your lines and masses and use them to express the beauty you see. 🐣🐣🐣

## Teacher

(continued from page 96)

St. Mary's College at Winona, Minnesota, and the Forest Preserve District, the Chicago Catholic Science Teachers Association held its second annual Natural Science Workshop at Camp Sagawau. For ten days, each beginning with Mass at 6 a.m., the teachers had field trips and classroom work until 9 p.m., after which many did "homework" until midnight. Those nuns really earned their two hours of scholastic credit, but one Sister voiced their unanimous opinion: "We're learning something we never get out of books." Those of us who live in a city convent never get to know what the outdoors is really like." And they—all science teachers in Catholic high schools and academics—recommended that there be similar workshops for teachers in the elementary schools of this Diocese. That is an accolade we treasure.

This year the Chicago Teachers College conducted its Second Annual Nature Camp at Sagawau from June 27 to August 20. Administered by the Chicago Board of Education, this is one of six teacher-training institutions accredited by the College of Education, University of Illinois, and the State superintendent of public instruction. A student may enroll in any one or more of four consecutive two-week courses. Each is organized to fit a workshop situation. Each offers two semester-hours of college credit for advanced graduates, teachers seeking promotional credits, and those working toward a master's degree in the teaching of biological sciences. Tuition is free to Illinois people. Aside from a small registration fee, board is the only personal cost and this, prorated, does not exceed \$20 per week. We furnish our bus for field trips and naturalists to assist the college faculty.

Concordia College, located near our headquarters in River Forest, as a part of its summer school for training Lutheran teachers, held its first annual workshop at Camp Sagawau this year. Assisted by our naturalists, the faculty gave instruction in natural science and outdoor education to nineteen students who attended for one week.

Several years ago the State superintendent of public instruction, Mr. Vernon Nickell, appointed a committee to promote, program and

conduct conservation workshops for rural school teachers in as many Illinois counties as feasible. Varying in length from one to three weeks, these are staffed from the several teacher training institutions, assisted by resource people from State departments and the Soil Conservation Service. In each, the time is divided about equally between classroom work and field trips, with each enrollee receiving commensurate college credit. This program has culminated in a large summer school conducted this year in an area developed for that purpose.

Mr. Nickell also appointed a Committee on Outdoor Education. Its function is to promote school camping in Illinois, field trips by school classes, and the incorporation of natural science and Nature appreciation into the school curricula. It is preparing a manual to guide these programs.

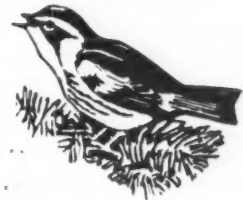
We serve on all of these committees and have participated in many training courses. We have learned that, when attendance is voluntary, a workshop will not be successful unless the teachers receive appropriate credits for the work they do. Without that bait, very few will sacrifice their time. If conducted or supervised by a teacher training institution, college credit can be given and this is preferable. Otherwise, local credit toward improvement of the teaching certificate should be awarded. Further, the cost per teacher must be held to a minimum but their stay in camp should be made enjoyable by providing comfortable quarters, plenty of good food, and plenty of fun.

Our educational program also includes a weekly Nature bulletin to all teachers; lectures, illustrated with movies, to school assemblies; training courses for youth group leaders; and naturalist service in about 250 summer day camps. It is evident that our staff, facilities and equipment will be devoted more and more to teacher training. Dr. Henry Baldwin Ward used to say that the little red schoolhouse and our national system of public education that has grown out of it are still, with all their defects, our most far reaching and potent means of developing public opinion and conditioning social conduct. Training a teacher may be likened to energizing an induction coil—she attracts and motivates the generations of pupils that come within her magnetic field.

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## Bobcat

(continued from page 82)

finally treed and killed he was found to be a good-sized tom, yet he weighed only eighteen pounds and gave evidence of starvation. Every night men and dogs had gone home to find ample dinners awaiting them, but the bobcat, exhausted from weary miles of unaccustomed steady running, was evidently unable to muster the excess of steel-spring energy necessary to make a nightly kill.

In addition to organized pursuit, the bobcat frequently falls victim to hunters in search of other types of game. In late December, 1954, a bobcat kit in Berkshire County, Massachusetts, was killed with bow and arrow by a teen-age boy seeking small game. And in the same county that year there were at least two instances of bobcats killed by cars while crossing highways.

Colloquially, the wildcat is often referred to as the bobcat. He is generally considered to be untamable. But, although a formidable foe when cornered or when hunting prey, he is essentially shy. Captive bobcats have usually been trapped. Small wonder that they maintain an active distrust of their captors. Yet William T. Hornaday described the lynxes as "sanguine, philosophic and peaceful." And there was a rather famous captive bobcat named Geronimo, who lived to about the age of sixteen as a beloved household pet. A former director of the Edinburgh zoo kept a Scottish wildcat, taken as a kitten, as an office pet. Like the bobcat, the Scottish wildcat, *Felis sylvestris grampia*, bears the reputation of possessing a vitriolic temper. This gentleman maintains that almost all wild creatures, taken young enough and given understanding care, may be made into the friends of their captors. However, like others who have at heart the interests of native wildlife, he believes that wild creatures should, if possible, be left to lead the lives for which they were born.

So far, the northeastern bobcat has survived the pressure of guns, traps, bounties and civilization. Those concerned with conservation would like to see him given at least the protection afforded other game mammals. Rather than attempting to exterminate him with bounties, the northeastern States might well protect in some measure this native

American reminder of wilderness days.



## Rattlesnakes

(continued from page 74)

that might resemble shelter. The scrawny hillside was almost as barren as a boardinghouse hallway. A few thin scrub oaks, none more than a few inches in diameter, spotted the area. It was almost as if the pair of rattlers had deliberately picked out the most open spot. No stone was larger than a pebble; the place was completely clear of brush and there was not a stick larger than a twig.

We were about two rough miles from the men back on Rattlesnake Mountain. But here were two lovelies, each about six feet. We had no equipment with us, no sticks, no sacks, and frankly I would not have tried to do anything about it alone if we had been equipped. I have a lot of respect for rattlesnakes. I asked my young friend to hot-foot it back across the hills and bring Lentz and Perkins as fast as possible. Meanwhile, I would try to ride herd on the snakes and keep them from getting away; how, I did not know. I had had no practice in this sort of operation.

The snakes were playing like kittens, with the lady being on the coy side. They would slither around each other, never coiling, but occasionally, in an undulating movement, gently twitch a long rattle to produce a momentary, subdued whirl of that noise nobody can forget, having once heard it in anger. They seemed to be completely oblivious of me as they went on with their touch-me-touch-me-not business.

One, I called him papa, was definitely the aggressor. Now and then he would glide alongside mama and seem to stroke the top of her head with the underside of his throat. She would quickly shy away at this and wiggle a few feet away, then stop. He would begin his circling again, now coming close, now wheeling back. Then he would come close enough to touch her, always with the underside of his throat. Once or twice there was something almost like dogs smelling noses as those great triangular heads waved near each other.

All of this operation took place in an area about ten feet square and

it went on and on. Approach; retreat. Willing; coy. Fascinated, I kept looking for a stick, a piece of brush, anything to use both as a means of keeping the snakes out in the open and as a weapon, if need be. I did not dare let them out of sight long enough to run forty or fifty yards to where there were a lot of rocks and perhaps a broken branch. But so long as they were courting, all was well.

I forgot to look at my watch, but I was hoping against time. The mountain boy had to run two miles and Perkins and Lentz had to run two back—run and walk and climb. A good guess was there was a lapse of from thirty to forty-five minutes to be expected.

Finally, what I had feared happened. Mama got tired of papa and started in a bee-line, and fast, for the rock ledge. I ran in front of her, jumped up and down, waving my arms and yelling. She whipped up at once into a fighting coil. Papa, right behind her, snapped into another. The buzz of those two rattles sounded to me like thunder, and much too close.

The Forest Park Zoo can always be thankful for the love-light in papa's eyes. For after a time, which seemed to me forever, he quieted down, slowly uncoiled with a sneer at me, and began making his passes again. He turned mama back toward the open ground and went back to making his pitch, with no better luck than before.

Twice more this scene was repeated. Twice, she tried to leave and I put on the song-and-dance act. Papa went through the same routine; the same, that is, except he ad libbed in the last act. When I jumped and yelled, he did not coil. He headed straight for me and I ran. I had no idea where I was going, except away.

Instinct caught him, I guess. He chased me a good twenty yards, then suddenly pulled up, turned back and went back for mama like an express train. She was uncoiling and heading for the rocks once more. He got back there and stopped her retreat.

They were still fooling around, she looking more reluctant and angry. Then Perk, and Moody came steaming over the hill and the rattlers froze in fighting pose. I was freezing too, but not for fighting. This time I was too nervous to hold the sack for the pair.



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# Nature AND THE MICROSCOPE

By JULIAN D. CORRINGTON

## Enigmatic Sweetbread

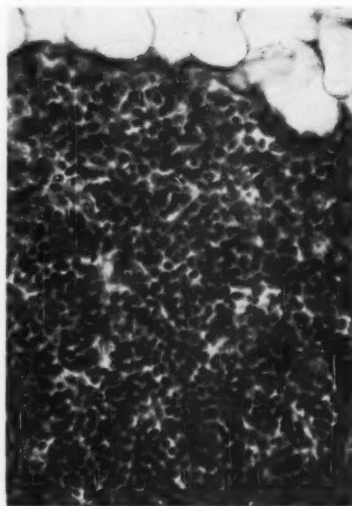
PREPOSTEROUS, IS IT NOT, that in

the year 1956 there should be an organ of ponderable size in the human body whose function is unknown? The layman holds scientific achievement in such esteem that he would be unlikely to accept such a statement. But so it is, for no man knows the role of the thymus. In spite of a large volume of research on this problematical structure, its original or its present purpose is still a mystery.

The *thymus*, which in lambs and calves is the throat or neck sweetbread of the butcher shop, begins its development as a pair of tubular outpocketings from the third pair of pharyngeal pouches of the embryo. These are the structures that correspond to the gill slits of aquatic vertebrates, and thus the primary



General view of thymus, 13X. Light area in each lobule is medulla.



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Thymic cortex, crowded with lymphocytes, 750X.

function of thymic tissue must have been that of some sort of gland connected with the gill system or with the adjacent gut. But whatever it may once have secreted, whether mucus for lubrication or enzymes for digestion, it does so no longer, and the term *gland*, frequently applied to the thymus, is not only inappropriate but definitely incorrect.

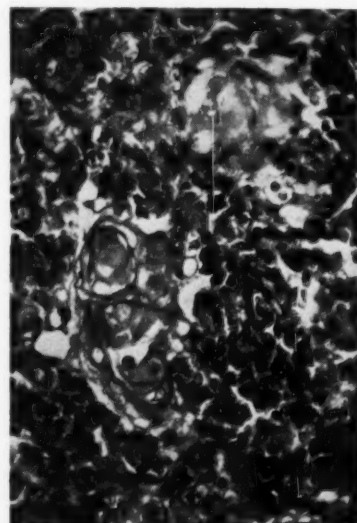
As development proceeds, the tubules from the two sides of the body lose their connections with the pharynx and migrate down the throat region, coming together in the midline to make what later appears as a single organ. Between the two lungs and in front of the heart is the anterior mediastinum, lying beneath the sternum, a space lodging the thymus. It is close to the pericardial sac of the heart and to the bases of the major veins entering the heart. Relatively largest in the embryo, where it weighs from 10 to 15 grams, the thymus continues growing until puberty, attaining a maximum weight of as much as 40 grams. Then begins a process of slow degeneration termed *age involution*, so that by adulthood or later the organ has returned to its weight at birth. Infections or pri-

vation may bring on a rapid change denoted as *accidental involution*.

Histologically this odd organ presents definite puzzles. The stroma or framework tissue has long been described as *reticular tissue*, which is a form of connective tissue and hence mesodermal in origin. But these thymic stroma cells are definitely endodermal, derived from the gill pouches, and it has repeatedly been shown that the reticular appearance is achieved by changes within these endodermal cells; a case of parallelism in development, producing a construction similar to but not the same as reticular tissue.

Likewise with the parenchyma—the essential tissue supported by the stroma. These cells seem to be ordinary lymphocytes, but this identity is not considered as finally settled, and some authors hold that they, too, are from endodermal epithelium, and prefer to call them *thymocytes*.

In gross view the thymus is seen to consist of numerous *lobes*, each divided into secondary *lobules*, within which the substance is deeply stained around the periphery and more lightly tinted in the center, forming a *cortex* and *medulla* respectively. There is no line of separation between these two zones; they differ in the number of lymphocytes suspended in the reticular stroma. In development, the original tubule of each side becomes thick-walled, the cavity is squeezed down to a slit-like proportion, and then lost completely. The solid structure now buds irregular stems, the future lobes, into



Medulla of thymus, with two Hassall's corpuscles, 825X.



the surrounding mesenchyme, and these develop secondary projections, the lobules; the mesenchyme makes the connective tissue septa of the adult organ. This construction can be demonstrated in the mature thymus by cutting serial sections, which will show that the medulla of all the lobules is a connected and continuous affair.

The characteristic feature of this organ is, however, the presence of a large number of discrete structures in the medulla called *thymic corpuscles*, or *Hassall's corpuscles* or *bodies*. One of these unique objects begins life as a single cell, or it may be a group of cells will be affected simultaneously. A deeply staining clear substance appears in these cells, finally crowding the nucleus until it disappears; the cells become concentrically arranged in the larger corpuscles, and degenerative processes are then in evidence, with disintegrated cells in the center, often calcified. Many theories have been proposed as to the significance of Hassall's bodies, but no satisfactory solution has been attained. Some think these corpuscles are surviving remnants of the epithelial cells of the embryonic organ; others have tried to prove them to be degenerating blood vessels.

The only known function for the thymus is the production of lymphocytes, but histologists have always felt this explanation to be partial and inadequate. Certain texts therefore classify the thymus with the hemopoietic organs—the blood-forming structures—and regard it as more or less related to the lymph glands. However, there are no germinal centers, afferent lymph vessels, or any lymph sinus—three important characteristics of lymph nodes and glands. Others put this puzzling organ with the endocrines, although admitting that it does not manufacture any secretion—a hopeful but illogical solution. Because of its involution at puberty, it was thought that surely the thymus must regulate the onset of adolescence. Once this job was done, it could well afford to regress. But a large number of experiments to test this seemingly obvious role have failed to support the idea, and have likewise given no aid to other views, or else have contributed conflicting evidence.

The usual stain for sections is hematoxylin and eosin, with which the cortex is colored a very dense

and dark blue because of the preponderance of closely packed lymphocytes. The medulla is considerably lighter, and here one gets a chance to see the so-called reticular cells. The eosin will show up as pink in the septa and blood vessels and in the hyaline cells of the thymic corpuscles. Involuting specimens will display varying amounts of adipose tissue replacing the original cells, and this is strikingly brought out by one of the fat-staining techniques.

One of these days some ingenious histologist is going to devise one or a set of experimental approaches to the problem of the thymus, but thus far it has resisted all attacks on unmasking its mission in life and remains the enigmatic sweetbread.

## Some New Books

### Research

Two professors of biology at Brooklyn College, M. L. Gabriel and Seymour Fogel, have put together sixty-three original papers by those who have played some part, major or minor, in the development and progress of the life sciences. *Great Experiments in Biology* is a well-conceived anthology of research, intended to "convey something of what science is and the way in which science grows," and the authors have done so by selecting seven chief fields, then exemplifying the mileposts of each. Under the heading *The Cell Theory* as an instance, papers by Robert Hooke, Dutrochet, Robert Brown, Schwann, H. V. Wilson, and Ross G. Harrison carry the reader through two and a half centuries of cell research, and through the phases of description, comparison, and functional studies, to experiment.

Other main topics are physiology, microbiology, plant physiology, embryology, genetics, and evolution. At the head of each section there is a chronology by the authors, from earliest beginnings to recent years; this allows the reader to learn or review his history of biology, and places each selected paper in its proper temporal setting. Then, before each entry, there is an introduction to both the subject and the investigator, with antecedents, results, and subsequent effects of the work. The reader is thus well prepared to appreciate the great experiment itself. All papers are given in English; there are twenty-one translations from several Continental languages by the senior editor.

The selection of material and its method of presentation are much to be commended. Any biologist, from novice to old hand, can read this volume with pleasure and profit, and all professional biologists will wish to add it to their personal library. Pp. xiii, 317; figs. 23. Prentice-Hall, Inc., Englewood Cliffs, N. J., 1955. \$3.95.

### Ornithology

A textbook of ornithology is indeed a *rara avis*—so rare, in fact, that the present example is unique. There are large numbers of manuals for identification, and many books on various aspects of bird study, but this is our one and only biology of birds. Written by George J. Wallace, of Michigan State College, *An Introduction to Ornithology* should fill a need of long standing. In this volume the student, either amateur bird watcher, novice, or professional ornithologist, will find brought together the history of bird study and its present status, the origin of birds, their place in the animal kingdom, their external and internal features and adaptations, all phases of their life cycles, migration, distribution, food habits and economic relations, their conservation and management, classification, fossil record, the methods used in studying birds, and the American ornithological organizations and their journals.

This complete coverage is presented in an agreeable style of writing, non-technical yet authentic, and accompanied by a wealth of good illustrations, both drawings and photographs. This book is a must for all serious students of birds and their ways. There have been so many naturalistic and anecdotal accounts of birds that it is refreshing to see the scientific aspect represented for once. Pp. xii, 443; figs. 180. The Macmillan Co., 60 Fifth Ave., New York 11, 1955. \$8.00.

### Zoology

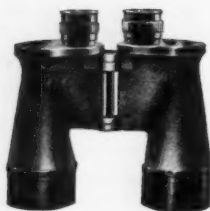
In their preface to *Zoology*, A. M. Winchester (Stetson University) and Harvey B. Lovell (University of Louisville) state that "every effort has been made to produce a volume which can be clearly understood, interesting, and informative." We affirm that they have succeeded admirably in this second edition, for which Dr. Lovell is brought in as junior author. There are 34 chapters and a glossary, and we found that the material was well selected,

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We enjoyed the handling of content in the chapter on the chemistry of life, in which all essentials are detailed without trying to make an organic chemist out of the reader; the introductory chapter on taxonomy, which clearly explains the aims and methods of this science; and the chapter on the honeybee, the best account we have seen in any text. Teachers of zoology will find it profitable to examine this excellent book. Pp. viii, 582; figs. 323. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York 3, 1955. \$6.25.

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Learnin' your anatomy!  
You may yen to garner men  
By wearin' silk and satin,  
But you'll don a dungaree  
Learnin' your anatomy.  
(Chorus)  
Learnin' your anatomy!  
You don't have to come from a great  
big school  
Not to go huntin' sharks in a  
swimmin' pool;  
You don't have to be so all-fired dull  
As to draw necturus with a plastic  
skull,—  
That you'll never see.  
(Chorus)  
That you'll never see!  
You study amphioxus  
And carve a squalus gill,  
Your present technique shocks us—  
Perhaps it always will.  
With your cat you go to bat  
To make a recitation,  
You'll be earnin' your degree  
Learnin' your anatomy.  
(Chorus)  
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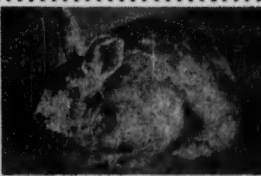
Everybody knows that the Ostrich is the biggest living bird. But did you know that it can run 30 miles an hour—that its kick can kill a man—that it has the largest eyes of any land creature?



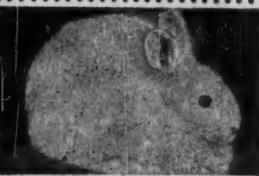
In an ordinary woodland pond you can find an amazing variety of fascinating creatures. Your Nature Program tells you what to look for, how to go about it.



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But when autumn comes, the weather gets colder, and he starts to change color. By the time the ground is covered with snow...



...he has become entirely white. Perfectly camouflaged once again, he is "invisible" to his enemies!



Which is the fragile flower and which is the flesh-eating animal? On the left is the lovely blossom of the Tulip Tree. But the "blossom" on the right is a hungry Sea Anemone, and its "petals" are waving tentacles, reaching out for prey!



See the mysterious, exciting life of Nature after dark—the great owls who hunt their prey in almost total darkness—all the strange creatures who live by night!



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